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RUSSIAN CONVENTIONAL ARMS TRANSFERS IN ASIA SINCE 1991

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RUSSIAN CONVENTIONAL ARMS TRANSFERS IN ASIA SINCE 1991

by

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December 2019

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This thesis examines the relationships between Russia's arms export industry and three major customer states in Asia. What motivated China, India, and Vietnam to procure conventional arms from Russian rather than other major suppliers, particularly in the post–Cold War era? The answer is a complex mix of strategic goals, political rationale, financial affordability, technological suitability, and old habit. This thesis centers on individual case studies for each of the three customer states, and is bookended by an opening review of the modern Russian arms industry and a final discussion of common themes and what to expect from future arms transfers from Russia. It uses press reporting, analysis by independent organizations, and a framework incorporating theories of international relations to address the research question. The main intention of this thesis is to examine the role of arms transfers across multiple states both as a practice per se, and as a component of national (and international) policy; additionally, it is designed to provide value to military personnel who wish to become more familiar with this important topic.

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RUSSIAN CONVENTIONAL ARMS TRANSFERS IN ASIA SINCE 1991

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requirements for the degree of

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ABSTRACT

This thesis examines the relationships between Russia's arms export industry and three major customer states in Asia. What motivated China, India, and Vietnam to procure conventional arms from Russian rather than other major suppliers, particularly in the post–Cold War era? The answer is a complex mix of strategic goals, political rationale, financial affordability, technological suitability, and old habit. This thesis centers on individual case studies for each of the three customer states, and is bookended by an opening review of the modern Russian arms industry and a final discussion of common themes and what to expect from future arms transfers from Russia. It uses press reporting, analysis by independent organizations, and a framework incorporating theories of international relations to address the research question. The main intention of this thesis is to examine the role of arms transfers across multiple states both as a practice per se, and as a component of national (and international) policy; additionally, it is designed to provide value to military personnel who wish to become more familiar with this important topic.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAM	air-to-air missile
AESA	active electronically scanned array
APC	armored personnel carrier
ASCM	anti-ship cruise missile
ASEAN	Association of Southeast Asian Nations
DIS	defense industrial sector
DRDO	Defense Research and Development Organization, the Indian state agency for military research and development
EEZ	exclusive economic zone
FAC	fast attack craft
FGFA	fifth generation fighter aircraft
HAL	Hindustan Aeronautics Limited
HVF	Heavy Vehicles Factory, an Indian state-owned arms manufacturer
IAF	Indian Air Force
IN	Indian Navy
L&T	Larsen and Toubro Limited, an Indian conglomerate company
LACM	land attack cruise missile
MBT	main battle tank
MiG-	Partial equipment designator originally indicating design by Mikoyan Design Bureau (now merged under UAC)
MoD	Ministry of Defense (India)
MTA	medium transport aircraft
NATO	North Atlantic Treaty Organization
NEP	New Economic Policy
NPOM	NPO Mashinostroyeniya, a Russian rocket design firm
O&M	operations and maintenance
P&C	procurement and construction
PLA	People’s Liberation Army
PLAAF	People’s Liberation Army Air Force
PLAN	People’s Liberation Army Navy

PLANAF	People's Liberation Army Naval Air Force
PRC	People's Republic of China
PVO-PRO	Russia's Air and Missile Defense Forces (*Voyska Protivovozdushnoy i Protivoraketnoy Oborony*)
R&D	research and development
ROE	Rosoboronexport or Rosoboroneksport, the Russian state agency for foreign arms sales
SAM	surface-to-air missile
SIPRI	Stockholm International Peace Research Institute
SLBM	submarine-launched ballistic missile
SSBN	nuclear-powered ballistic missile submarine
SSM	surface-to-surface missile
Su-	Partial equipment designator indicating design by JSC Sukhoi Company (now merged under UAC)
THAAD	terminal high altitude area defense
TIV	trend-indicator value; a figure assigned by SIPRI to a transfer of conventional military systems or components, determined by proprietary methods and expressed in 1990 USD
U.S.	United States of America
UAC	United Aircraft Corporation, a Russian conglomerate company
UAV	unmanned aerial vehicle
UN	United Nations
UNCLOS III	Third United Nations Convention on the Law of the Sea
USD	United States dollars
USSR	Union of Soviet Socialist Republics
VAD-AF	Vietnam Air Defense – Air Force
VPA	Vietnam People's Army
VPN	Vietnam People's Navy
WTO	Warsaw Treaty Organization

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I. PREMISE

A. MAJOR RESEARCH QUESTION

This thesis addresses three major customer nations of the Russian arms export industry in Asia, an area of increasing importance to United States foreign policy: China, India and Vietnam. For these importers of conventional arms, what are the advantages of purchasing Russian systems?

Specifically, how has Russia incentivized and developed its export deals in this region to make them more appealing to potential customers? To what extent have arms transfers provided the recipient nation with a desired capability at a cost, timeline, or technology level that the recipient cannot attain via domestic production or from another supplier? How do recipients use any technology transfer resulting from arms deals? Are they motivated by a desire on the part of the importing nation to establish a particular political posture (either positive or negative in orientation)? What, if anything, is the role of path dependency?

B. SIGNIFICANCE OF THE RESEARCH QUESTION

The defense industry forms a substantial portion of the Russian economy, and the Russian military is undertaking a significant modernization effort. Russia is among the world's most prolific exporters of conventional arms, both new and second-hand. While much ink has been spilled over Russia's (and the Soviet Union's) robust arms export trade as a revenue-generating element of the economy and a means of paying for military modernization along with a return to world power status, somewhat less attention has been paid to the use of the arms trade as a means of establishing economic and strategic relations with potential importers, several of whom are themselves rising major powers.

The global arms trade is a multi-billion-dollar industry with the potential to influence economic, political, and strategic relations between states. Foreign military sales may serve as one element within a state's pursuit of its interests. If conducted in accordance with U.S. interests, arms proliferation can enhance the security of American allies and partners; if conducted contrary to U.S. interests, it can also shift strategic balance away

from American interests. In either case, if done carelessly, it can bring about undesired destruction or prolong conflicts. Since the United States is not the world's only major arms exporter, it is helpful to consider the customers and motivations of other countries' arms export industries, particularly since developing states are playing an increasingly prominent role in the global arena, acting primarily but not exclusively as consumers in the international arms trade. Analyzing the reasons that regimes choose to purchase Russian weapons systems, both in general and in preference over other foreign systems, may help American policymakers better understand how to interact with these states.

This thesis is also intended to bring together theories of international relations and specific instances of military sales in a manner that is useful and accessible to U.S. military personnel who may encounter foreign militaries and dignitaries, as well as develop new systems.

C. LITERATURE REVIEW

The role of the arms trade within a larger strategic, political or economic context is typically implied but not dwelt on in most current research. As such, authors frequently reference the arms trade as a given part of a broader field under discussion or focus on trade specifics *per se*, but less often seek to establish how the conduct of the arms trade influences, or is influenced by, buyer state efforts to build political, strategic or commercial relationships. Ian Anthony does ask these questions in *Russia and the Arms Trade*, separating answers into "four 'baskets' of issues and the interaction between them … politico-military issues, economic issues, industrial issues and technological issues," but with a publication date of 1998 the book cannot take into account more recent modernization trends in the Russian and many other militaries.[1] Stephen Walt's *The Origin of Alliances* also proposes multiple non-strategic factors that may influence alliance formation, although he concludes that the origins of alliances and alignments are best

[1] Ian Anthony, "Trends in Post-Cold War International Arms Transfers," in *Russia and the Arms Trade*, ed. Ian Anthony (New York: Oxford University Press, 1998), 16.

explained by an overarching threat calculus rather than disparate elements such as foreign aid and ideological commonalities *per se*.[2]

The scholarly consensus is that Russian arms exports are significant, although specific figures are elusive due to the nature of the industry, which is sensitive, multifaceted, and often classified in the details.[3] Multiple organizations devote resources toward quantifying components of defense industries and military expenditures worldwide. The Stockholm International Peace Research Institute (SIPRI) maintains several comprehensive databases of relevant information dating back to the 1950s and publishes extensively on arms trade topics, while Jane's Defense Group provides up-to-date reporting on new military developments and current orders of battle.

Russia is generally acknowledged as the second most prolific arms export state in the world, behind only the United States.[4] However, another common theme in the literature is that Russian industries have struggled to compete on the post-Cold War international arms market to a greater degree than in the 1950s through 1980s, as Trenin and Pierre noted in 1997.[5] This was in large part due to the Soviet Union's ability to set arbitrarily low prices and export Russian-made weapons throughout the Soviet Union and greater Warsaw Treaty Organization unchallenged.[6] SIPRI estimates that, while in the latter 1980s Soviet exports of major conventional systems comprised 38 percent of the

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[2] Stephen M. Walt, *The Origins of Alliances* (Ithaca, NY: Cornell University Press, 1987), 263–72. Walt does argue that many of the disparate elements are simply components or results of threat balancing – foreign aid, for example, makes the recipient stronger to balance a common adversary, while simultaneously signaling to the recipient state that the aid-giver's own intentions are friendly.

[3] Aude Fleurant, "Arms Production and Military Services," in *SIPRI Yearbook 2015: Armaments, Disarmament and International Security*, eds. Ian Davis et al. (New York: Oxford University Press, 2015), 450–451; Ian Anthony, Introduction to *Russia and the Arms Trade*, ed. Ian Anthony (New York: Oxford University Press, 1998), 14–15.

[4] Stockholm International Peace Research Institute (SIPRI), "Importer/Exporter TIV Tables," SIPRI, March 11, 2019, https://armstrade.sipri.org/armstrade/page/values.php.

[5] Dmitrii Trenin and Andrew J. Pierre, "Arms Trade Rivalry in the Future of Russian-American Relations," in *Russia in the World Arms Trade*, eds. Andrew J. Pierre and Dmitrii Trenin (Washington, DC: Carnegie Endowment for International Peace, 1997), 115, 121–22; Anthony, Introduction to *Russia and the Arms Trade*, 4.

[6] Eugene Kogan, "The Russian Defense Industry 1991–2008: From the Collapse of the Former Soviet Union to the Global Financial Crisis," in *The Modern Defense Industry: Political, Economic, and Technological Issues*, ed. Richard A. Bitzinger (Santa Barbara, CA: Praeger Security International, 2009), 197.

global market, "by 1992 the Russian share had declined to 12 per cent of the world total and in 1994" to a low of "only 3 per cent."[7] Kogan argues that control of the Russian defense sector has increasingly re-nationalized since 2006, but this has not brought a return of low costs.[8] Despite rising costs, the Russian arms industry has been sustained under the Vladimir Putin administration by a combination of increased domestic demand, brought on by an ambitious $645 billion modernization program, and a robust international market.[9] These factors impact the Russian defense industry's inventory, capacity and need for foreign customers.

Russia's most lucrative export markets are located in Asia due to the ascendancy of China and India as regional (or worldwide) powerhouses with expanding conventional arms needs.[10] The literature addressing the political, military and economic rise of each vastly exceeds the scope of this thesis, but several works have been particularly informative to this thesis for framing these customer states' strategic and military priorities. In his 2005 book *China's Rise in Asia: Promises and Perils,* Robert Sutter examines China's national goals and international relationships since the founding of the modern Chinese state, addressing the nuances of Beijing's "strategic partnership" with Moscow throughout.[11] David Malone's *Does the Elephant Dance?: Contemporary Indian Foreign Policy*, published in 2011, provides a similar foundation for India since the 1940s.[12] Ryan Clark

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[7] Anthony, Introduction to *Russia and the Arms Trade*, 4.

[8] Kogan, "The Russian Defense Industry 1991–2008," 197.

[9] Sam Perlo-Freeman, "Russian Military Expenditure, Reform and Restructuring," in *SIPRI Yearbook 2013: Armaments, Disarmament and International Security*, eds. Tilman Brück et al. (New York: Oxford University Press, 2013), 142.

[10] SIPRI, "Importer/Exporter TIV Tables." NOTE: All TIV tables use trend-indicator values expressed in constant 1990 U.S. dollars, a unit that is unique to the SIPRI databases, rather than actual financial cost (either real or adjusted for inflation). These values are meant to express volume and a standardized worth based on type and condition of equipment transferred rather than actual price paid, as financial data may be unavailable or subject to excessive manipulation. A full explanation can be found on the SIPRI arms transfer database methodology webpage, http://www.sipri.org/databases/armstransfers/armstransfers/background. SIPRI estimates that Russia has exported an equivalent value to $121.3 billion in arms from 1991–2015; of this total, $80.7 billion have gone to Asian states ($26.9 billion since 2010).

[11] Robert G. Sutter, *China's Rise in Asia: Promises and Perils* (Lanham, MD: Rowman and Littlefield Publishers, 2005), 107.

[12] David Malone, *Does the Elephant Dance?: Contemporary Indian Foreign Policy* (Oxford: Oxford University Press, 2011).

argues that Vietnamese force modernization was driven by an external Chinese threat as well as internal desires for economic development in his 2014 master's thesis, "Vietnam's Drive to Modernize Militarily—Causes and Implications."[13] Finally, power dynamics in the South China Sea have been treated in multiple works by organizations including the Center for Strategic and International Studies.[14]

D. POTENTIAL EXPLANATIONS AND HYPOTHESES

Drawing on the frameworks provided by existing literature, one hypothesis is that customer states in Asia are motivated to purchase Russian arms by political concerns. Some customer states may seek to leverage weapons imports for a positive political outcome (e.g., friendlier relations with Russia), but others may seek a negative political outcome (e.g., rejection of relations with a third party such as the United States or an attempt to deter a third party such as China). Other customer states may be pursuing a non-alignment strategy, and as such, they may deliberately seek to balance strategic military relationships with both Western and non-Western powers.

A second hypothesis is that customer states in Asia are motivated by economic or technological concerns—essentially seeking the best commercial return on their investment due to a limited defense budget. Such returns could include things like technology transfer programs, joint development programs, personnel training, maintenance contracts, future systems upgrades and discounted future sales. Some states may be influenced by a form of institutional and industrial inertia: lack of desire to develop indigenous production capability, or lack of desire to switch producer countries. This might be motivated by a desire for systems continuity and interoperability.

Since states are complex organisms with many interests, these hypotheses are not mutually exclusive; however, I discuss whether one tends to be more salient than the others

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[13] Ryan S. Clark, "Vietnam's Drive to Modernize Militarily - Causes and Implications" (master's thesis, Naval Postgraduate School, 2014), 73–77, http://hdl.handle.net/10945/44539.

[14] Michael Green, Kathleen Hicks, Zack Cooper, John Schaus and Jake Douglas, *Countering Coercion in Maritime Asia: The Theory and Practice of Gray Zone Deterrence* (Lanham, MD: Rowman and Littlefield, 2017); Anton Tsvetov, "Russia's Tactics and Strategy in the South China Sea," Center for Strategic and International Studies, November 1, 2016, https://amti.csis.org/russias-tactics-strategy-south-china-sea/.

to a particular case, since that might help predict a state's most likely future courses of action. For example, a customer state that strongly values an existing strategic or political partnership might elect to purchase arms from the partner nation, turning down offers from alternate suppliers that are more financially favorable, are better tailored to the military needs of the customer state, or have fewer strings attached. Alternately, a supplier state's demonstrated willingness to provide highly favorable transfer terms to one customer could inspire follow-on deals with other customer states, with implications for regional security.

Overall, I find that both the first and second hypotheses were applicable in customer states' motivations to procure conventional arms and associated technology from Russia. However, customer states' starting points and desired end states varied, and the relative importance of economic, technological and political concerns to their arms transfer regimes tended to transform over time within each customer state. Overall, a third hypothesis prevails: arms transfers have been motivated by a dynamic mix of internal and external factors, resulting in a complex economic, strategic and political relationship with Russia.

E. RESEARCH DESIGN

The nature of the relationship between Russia and a particular customer state is of individual importance; this thesis treats the identification of wider trends as a major component, but not as the sole purpose of the thesis. Nonetheless, a single case study is not sufficient to characterize relations between Russia and its arms export customer states. The main body of thesis therefore consists of three comparative case studies: bilateral relations between Russia and China, India and Vietnam. I focus on post-Cold War developments, although some pre-1991 background is necessary.

China and India were selected as case studies because they are two of Russia's most significant conventional arms importers, and they have been of increasing independent interest to United States policy makers since the end of the Cold War. Both nations have purchased major terrestrial, airborne and seaborne platforms and systems; in the case of India, it has also undertaken several joint development projects with Russia. Vietnam was selected due to its status as a minor but expanding military power within Southeast Asia; the state's growing defense budget has funded major procurements from both Russia and

Western states. Vietnam will likely take a more assertive regional role in the coming years, particularly given its stake in international territorial disputes.

Prior to addressing the case studies, a general overview of the Russian arms industry and export trade since the 1991 collapse of the Soviet Union is given. This is necessary to establish historical context and to highlight that twenty-first century Russian politics exists on the same continuum as Soviet politics; despite the downfall of the USSR, many of the same institutions and lawmakers remained in power in post-communist Russia. It is also intended to highlight trends in export patterns since 1991. Additionally, Soviet military development (and frequent over-production) has left modern Russia with a surplus of aging equipment, thus potentially impacting contemporary Russian export patterns.

The thesis uses press reporting, official announcements, and publicly available records of defense agreements and arms transfers, such as those collected by the Stockholm International Peace Research Institute (SIPRI), as primary sources. Due to the typically sensitive nature of weapons acquisition, these sources often do not provide exhaustive information on Russian arms exports; they should, however, be sufficient to draw general conclusions about major systems and trends. Secondary sources include scholarly analyses of strategic relations between Russia and the three case study states.

A note about numbers: due to the sensitive nature of the defense industry, most of the currency amounts given in this thesis are estimates. In addition, I make extensive use of trend-indicator value (TIV) assessments from the Stockholm International Peace Research Institute (SIPRI). Those figures are normalized to SIPRI's proprietary scale and do not necessarily reflect the monetary amounts actually involved in the relevant transfer arrangements.[15] The use of TIVs attempts to compensate for fluctuating exchange rates, artificially devalued currency, subsidization/payment with commodities, and other factors that can distort the value of equipment changing hands. When not explicitly noted in the text, the footnote will clarify the source of a number or value that is referenced in the thesis.

[15] "Sources and Methods," SIPRI, accessed November 30, 2019, https://www.sipri.org/databases/armstransfers/sources-and-methods.

F. THESIS OVERVIEW

This paper opens with a survey of the Russian arms export industry since the collapse of the Soviet Union. Although this is enough material for several theses, I focus on the transition from a centralized toward a privatized economy, post-Cold War technological changes, Russian military modernization in the Putin era, and the general effects of each of these on the arms industry.

The following chapters cover three individual country case studies: China, India and Vietnam. Each case study begins with a sketch of the state's major political developments, strategic interests and defense-related policies. It then describes and evaluates Russian weapons imports to the state since 1991, with comparisons to Soviet-era transfers as applicable. Each chapter addresses the main and subsidiary research questions posed at the beginning of this proposal. I have elected to include end-user case studies, rather than devoting the whole thesis to a general survey of the Russian arms industry from the Russian perspective, because the case study format is more likely to reveal relative importance of politics, strategy, technology and economy in a particular state, all of which influence its government's decision to import foreign arms.

II. THE RUSSIAN ARMS EXPORT INDUSTRY

Russia is the second largest exporter of military and dual-use systems in the world, behind only the United States. However, precise figures are difficult to derive. Russia is not a signatory to the UN's 2013 Arms Trade Treaty, which requires annual reporting on export values with optional reporting on description and purpose.[16] Even if Moscow had signed on, the treaty defines arms transfer activity too narrowly—as "export, import, transit, trans-shipment and brokering"—to provide much insight into peripheral practices like licensed production and maintenance contracts, which are also an important element of the Russian arms industry.[17] Although Russia is a party to the 2005 Wassenaar Arrangement, which also calls for routine reporting on military and dual-use exports in the name of antiterrorism, adherence to those terms is strictly voluntary.[18]

This chapter gives an overview of the structure and focuses of Russian arms manufacturing industries, starting during the Warsaw Treaty era but primarily since the end of the Soviet Union. It also discusses major Russian arms manufacturers, military modernization and advancements in military technology. Finally, it concludes with a brief analysis of the security implications for the wider world and proposes a set of motivations for states choosing to purchase Russian-made arms.

A. ARMS TRANSFERS UNDER THE WARSAW PACT

The Soviet Union (and within the USSR, Russia) dominated weapons manufacture within the larger Warsaw Treaty Organization. Soviet arms exports similarly dwarfed exports from individual WTO satellite states, averaging about $6.9 billion in annual exports from 1955 to the Sino-Soviet split of 1961; $9.6 billion per year during the remainder of

16 "Arms Trade Treaty," entered into force December 24, 2014, *Treaty Series: Treaties and International Agreements Registered or File and Recorded with the Secretariat of the United Nations*, no. 52373 (2013): 3, https://treaties.un.org/doc/Publication/UNTS/No%20Volume/52373/Part/I-52373-08000002803628c4.pdf.

17 "Arms Trade Treaty," 3.

18 "About Us," Wassenaar Arrangement, last modified August 9, 2019, https://www.wassenaar.org/about-us.

the 1960s; $13.6 billion each year through the 1970s; and $14.2 billion annually in the 1980s.[19] This is attributable largely to the high degree of equipment standardization enforced under the Warsaw Pact as well as to the Soviet Union's greater population, manufacturing capacity and emphasis on the defense industry over consumer manufacturing.[20]

The total value of arms exports to WTO states remained relatively consistent, varying from a 1950s annual average of $3.1 billion to a 1960s average of approximately $3.9 billion, and declining to $3.4 billion in the 1980s.[21] Exports to Warsaw Pact states comprised a significant but decreasing portion of total Soviet arms exports, whose volume underwent boom-and-bust cycles in other markets: China, for example, provided the most lucrative single market during the 1950s, but dwindled following the Sino-Soviet split, while Libya and Iraq became major recipients of Soviet arms starting in the middle to late 1970s.[22]

Compulsory dependence of the Warsaw Pact states on Soviet weapons designs and export equipment tended to stifle indigenous technological creativity. A few non-Soviet designs, such as Czech aircraft and armored vehicles, came to enjoy popular usage within the Warsaw Pact outside their country of origin. Non-Soviet states were forced to balance "demands of domestic weapons production and sale in peacetime with the needs of military efficiency"—a task of which Moscow was generally supportive, given that satellite states' defense industries might "provide excess capacity for the alliance" in a future crisis.[23]

Despite the dominance of the Soviet arms industry, other Eastern bloc states still maintained their own indigenous arms production and export capability. Czechoslovakia,

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[19] SIPRI, "Importer/Exporter TIV Tables."

[20] William J. Lewis, The Warsaw Pact: Arms, Doctrine, and Strategy (Cambridge, MA: Institute for Foreign Policy Analysis, 1982), 122.

[21] SIPRI, "Importer/Exporter TIV Tables."

[22] SIPRI. NOTE: TIVs. WTO member states received approximately 45 percent of all Soviet arms exports (by value) before 1961; 41 percent from 1962–1969; 28 percent in the 1970s; and 24 percent in the 1980s and 1990.

[23] Condoleezza Rice, "Defense Burden-Sharing," in *The Warsaw Pact: Alliance in Transition?*, eds. David Holloway and Jane Sharp (Ithaca, NY: Cornell University Press, 1984), 77.

for example, exported $28.7 billion in arms over the life of the Warsaw Pact, while Poland exported nearly $6.7 billion; East Germany, $828 million; and Romania, $784 million over the same time period.[24] Except in the case of Romania, Moscow was the primary recipient of arms exports from these countries—over seventy percent of Czechoslovakian, Polish and East German exports by value were shipped to the Soviet Union, while most of the remainder shipped to regimes allied with Moscow.[25] This ratio changed over time, however, with the "third world" share of the export market increasing rapidly in the 1980s as Warsaw Pact states autonomously sought new markets to sustain their indigenous defense industries.[26] Exports to Western and NATO-allied regimes were virtually nonexistent. While perhaps not surprising, this statistic stands in sharp contrast to the relatively robust level of non-military trade between the Soviet sphere of influence and the West. In this respect, the structure of the arms trade under the Warsaw Pact was not a completely closed system, but rather a system with a clear outer boundary and a single hub: the Soviet Union.

The Soviet military budget on the eve of the USSR's collapse would still dwarf current Russian military expenditures, despite recent spending increases. SIPRI estimates that Moscow allocated $340 billion to the military budget in 1988, and $270 billion in — and these numbers themselves were dwarfed by the Reagan- and Bush-era U.S. military budgets with which the Politburo was trying to keep pace.[27] In the years following the collapse, military spending declined; 1992 spending was less than five percent of 1990 levels, and the large nominal budget increases over the next years were negated by the

[24] SIPRI, "Importer/Exporter TIV Tables." As for the remaining WTO members' arms exports, exports either amounted to under $250 million during the life of the Warsaw Pact (Hungary, Bulgaria) or no data is available from SIPRI (Armenia).

[25] SIPRI. NOTE: TIVs. In the case of Romania, 38 percent of its total arms exports by value were bound for the Soviet Union; another 24 percent came from a three-year span in 1982–1984 when Romania furnished the government of Iraq with 150 T-55 tanks.

[26] Rice, "Defense Burden-Sharing," 75–76.

[27] "SIPRI Military Expenditure Database," SIPRI, March 11, 2019, https://www.sipri.org/databases/milex. Numbers are given in 2014 USD unless stated otherwise in the footnote.

severe inflation from the transition to the market economy. Adjusted to 2014 U.S. dollars, Russian military expenditures reached a nadir of $19.2 billion in 1998.[28]

The struggling economy severely limited Moscow's research and development capacity and emphasized the need for foreign money, while the warming atmosphere of U.S.-Russian relations provided another impetus to dispose of unneeded-era Soviet systems: to former WTO states whose militaries now seemed incomplete without some international framework, to disgruntled Middle Eastern autocratic regimes, and to the rising powers in South and East Asia. However, the transition to the market economy never finished with the liberal outcome Western politicians hoped for, and conversion of Soviet defense industries to civilian purposes remained incomplete. The rise of the oligarchs—individuals wielding massive influence over key industries or services—that began under Gorbachev would continue into the new millennium, setting the stage for a new autocracy and the re-nationalization of the Russian arms industries, insofar as they had ever been effectively private.

B. RUSSIAN ARMS INDUSTRY STRUCTURE AND PATTERNS

A common theme in the literature is that the arms industries of present-day Russia, to a greater degree than the bipolar world power structure days of the Cold War, have had to struggle to stay relevant in the face of increased international competition and decreased resources.[29] With the collapse of the Soviet Union and the dissolution of the Warsaw Treaty Organization, Russian-made arms—which accounted for approximately 85 percent of total arms produced in the Soviet Union—lost a significant, ready-made export market.[30] SIPRI estimates that, while in the latter 1980s Soviet exports of major conventional systems comprised 38 percent of the global market, "by 1992 the Russian share had declined to 12 per cent of the world total and in 1994 … to only 3 per cent," the

[28] SIPRI.

[29] Trenin and Pierre, "Arms Trade Rivalry in the Future of Russian-American Relations," 115, 121–22; Anthony, Introduction to *Russia and the Arms Trade*, 4.

[30] Kogan, "The Russian Defense Industry 1991–2008," 197.

low point of the Russian arms export market.[31] The Yeltsin administration sought to "recapture abandoned positions" despite downsizing the defense industry.[32] The marketization of Russia's economy marked an end to massive government subsidies of the military-industrial complex, making the artificially low prices of Soviet export systems impossible to sustain. Although control of the Russian defense industry has increasingly re-nationalized since 2006, consolidation has not brought down costs.[33] By 2013, however, the Russian arms trade had recovered to 7.9 percent of the world market and was worth an estimated $32 billion.[34] Domestic demand has risen as well; under Vladimir Putin, the Kremlin has undertaken an ambitious modernization program that will invest $645 billion in weapons and systems upgrades by 2020.[35] These trends have likely impacted the Russian defense industry's inventory, capacity and need for foreign customers. Russia's most lucrative export markets are currently in Asia.[36]

The defense industry in Russia today is dominated by conglomerates in a patrimonial relationship with the government. The Putin regime has both encouraged and mandated the trend of conglomeration, although state control of the defense industry in Russia is a used concept, and despite the fact that the resulting organizations are often not cost-effective. This section will describe the relationship between the state and the defense industrial sector (DIS), outline the current major manufacturers of Russian military equipment, and identify several trends within the industry as a whole.

At the center of the DIS is Rosoboronexport (ROE), the primary "state agency for arms sales." With predecessor bureaus in the Soviet government since the 1950s, the current agency was created in November 2000 through consolidation and since the ascent of Vladimir Putin "has become an industrial behemoth that is monopolizing whole sectors

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[31] Anthony, Introduction to *Russia and the Arms Trade*, 4.

[32] Trenin and Pierre, "Arms Trade Rivalry in the Future of Russian-American Relations," 119.

[33] Kogan, "The Russian Defense Industry 1991–2008," 197.

[34] Fleurant, "Arms Production and Military Services," 445.

[35] Perlo-Freeman, "Russian Military Expenditure, Reform and Restructuring," 142.

[36] SIPRI, "Importer/Exporter TIV Tables." SIPRI estimates that Russia has exported an equivalent value to $121.3 billion in arms from 1991–2015; of this total, $80.7 billion have gone to Asian states ($26.9 billion since 2010).

of this industry on behalf of the state."[37] After the anemic 1990s, the revival of the Russian arms industry has been due in large part to the top-down policies of Vladimir Putin's regime, as well as a more favorable geopolitical climate facilitating increased domestic and foreign procurement.

Arrayed around ROE are the defense industries, clustered functionally. To say that there is a robust military-industrial complex in Russia would be misleading by understatement. Having emerged from the fatally militarized Soviet Union, the contemporary state and the defense industry are still far more closely intertwined than they are in the United States, for example, and they have become even more tightly linked during the first and second Putin administrations.[38] The Kremlin and its *siloviki* have formed a patrimonial, or perhaps a neo-NEP type, relationship.[39] This system, marked by rent-seeking behavior by nominally private individuals, is marginally profitable at best, yet largely justified or rationalized by government officials as the best way to align official strategic thinking with production capabilities.[40] The primary symptom of such a relationship is the state corporation—whose stock may be jointly owned by its shareholders, but whose existence and (to a varying extent) funding are mandated by the government. Naturally, many of the stockholders were government appointees.

In 2006 the United Aircraft Corporation consolidated the formerly discrete Sukhoi, Irkut, Mikoyan-and-Gurevich, Ilyushin, Tupolev and Yakovlev firms under one state-controlled umbrella, although each company has continued to manufacture their respective fixed-wing aircraft along more or less similar lines of specialization as before the merger.[41] The following year, the Putin administration founded Rostec, another state corporation, whose purview includes Russian Helicopters, the company responsible for rotary-wing

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[37] Stephen J. Blank, *Rosoboroneksport: Arms Sales and the Structure of Russian Defense Industry* (Carlisle, PA: U.S. Army War College Strategic Studies Institute, 2007), 5.

[38] Blank3.

[39] Blank, 6.

[40] Blank, 7, 9.

[41] Stockholm International Peace Research Institute (SIPRI), "SIPRI Arms Industry Database," SIPRI, March 11, 2019, https://www.sipri.org/databases/armsindustry. Employment estimates were unavailable.

aircraft research, development and manufacture in Russia and whose employees numbered about 42,000 in 2014.[42] Almaz-Antey, the largest Russian arms manufacturing organization by revenue and itself the product of a 2002 merger, focuses on the development and production of air defense systems and employed nearly 100,000 people in 2014.[43] Russian ship-building is similarly consolidated under the United Shipbuilding Corporation, with 287,000 workers spread primarily over the corporation's three main subsidiaries.[44] Additional conglomerations for terrestrial vehicles, instruments, engines, electronics and short-range missiles manufacturing exist as well. Because of their size and the scale of accompanying graft, however, in addition to the nature of their manufactures and the feast-or-famine character of the international arms market, these organizations are not always solvent even within Russia's defense industry; in fact they frequently suffer from annual losses and bankruptcy.

Looking at sales of military and civil equipment among the major Russian firms that manufacture conventional arms, several patterns emerge that are unique to Russia among major arms manufacturers. First, it is immediately clear that the organizational structure of the Russian defense industry is different from those of Western and Asian counterparts, simply by virtue of the number of Russian subsidiary companies on SIPRI's list of the world's "Top 100" arms manufacturers, independently large enough to merit a mention. This number is decreasing, however, as the Putin administration continues to consolidate manufacturers.

Second, as can be seen in Figure 1, the Russian corporations that manufacture military systems tend to rely on arms sales (rather than manufacture of equipment for civilian businesses) as a source of income to a far greater extent than major arms manufacturers elsewhere in the world. Figure 1, adapted from SIPRI data covering the world's "Top 100" arms manufacturer between 2002 and 2018, illustrates this disparity. For the average Russian "Top 100" company, sales of military equipment account for

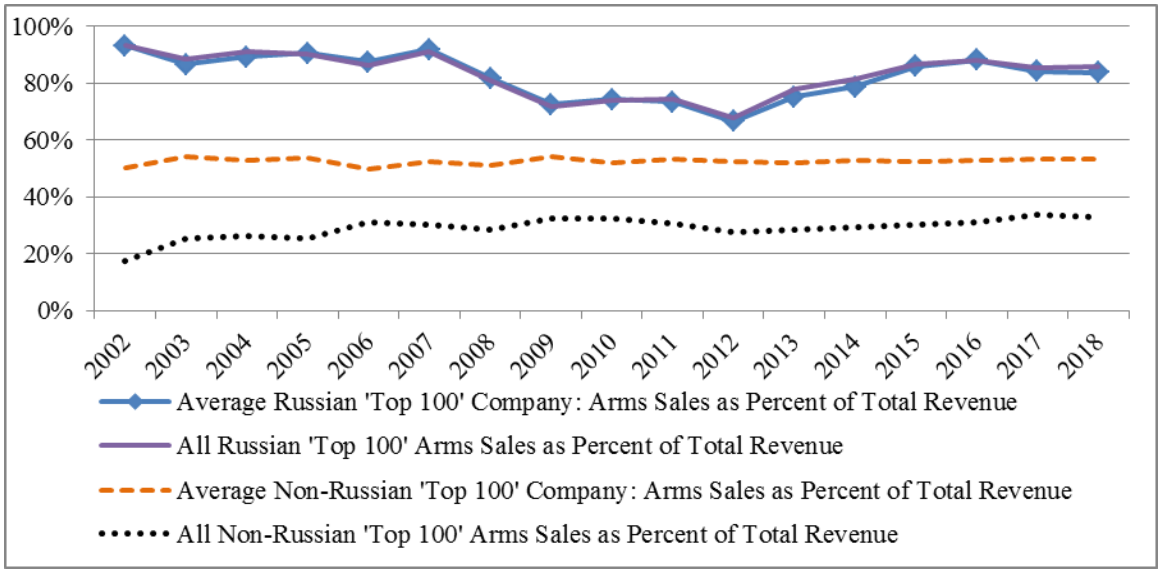
[42] SIPRI.

[43] SIPRI.

[44] SIPRI.

approximately seventy to ninety percent of its revenue; elsewhere in the world, the average "Top 100" arms manufacturer derives just over half of its revenue this way.[45] The difference is even starker when one takes the revenues of massive organizations like General Electric, ThyssenKrupp, Mitsubishi and Airbus into account. While such companies are involved enough in the arms manufacturing business to rank in SIPRI's "Top 100" list, their interests in civilian sectors are so extensive that arms sales account for less than twenty percent of their overall income; none of them are Russian.[46]

Figure 1. Arms Sales as Portion of SIPRI "Top 100" Firms' Total Revenue, per Company and Overall[47]



[45] SIPRI. It should be noted that these lists often exceed 100 entries, as large enough subsidiary companies are included but do not receive a numbered ranking. It should also be caveated that these "Top 100" lists obviously do not take into account independent companies that are too small to make the list; however, I believe SIPRI's figures provide a reasonably accurate picture of the overall patterns, particularly given the Russian defense sector's penchant for conglomeration. Finally, these figures exclude Chinese manufacturers, as SIPRI does not have enough information to make accurate comparisons, although the authors observe that several Chinese companies would undoubtedly make the list.

[46] SIPRI.

[47] Adapted from SIPRI, "SIPRI Arms Industry Database."

This is due to several factors, discussed above, and persists despite state encouragement for the firms to increase production of civilian equipment. One obvious *effect* of the current situation, however, is that Russian arms manufacturing companies continue to go through periods of extreme austerity if military sales dry up—domestically, abroad or both—and thus have often been reliant on state subsidies during slower procurement periods. The reliance on arms manufacture also incentivizes foreign military sales, which in turn often dovetail with the government's political priorities. Thus, the tangled relationship between the Kremlin and the ostensibly nationalized firms that produce the bulk of military systems in Russia is multi-layered, with roots in previous eras; no regime change in Russia has completely erased the older systems on which it is built.

A third trend also becomes clear: the Russian defense industry has been regaining lost ground since the early 2000s, both in terms of the market share and in absolute figures, despite setbacks in Russia's other major economic sectors. In 2002 (the earliest year for which data are available), only four of SIPRI's "Top 100" arms manufacturing companies were Russian: all made planes or aerospace equipment, and none ranked higher than thirty-seventh on the list.[48] For contrast, forty-seven of the Top 100 were American companies or subsidiaries, and nine were German. In 2008, Russian corporations claimed eight slots on the list, ranging from seventeenth to ninety-eighth. Finally, by 2014, nineteen of SIPRI's Top 100 companies were Russian (although eight of these entries are subsidiaries of the larger state corporations on the list), with Almaz-Antey reaching the eleventh slot and with a far more diverse offering of systems represented. By comparison, U.S. firms made the list forty-three times, and Germany three times in 2014. DIS arms sales from the Russian members of the Top 100 to domestic and foreign customers have grown in the new century—from an estimated $2.96 billion in 2002 to $40.75 billion in 2014, although recent years have seen a slight downturn.[49]

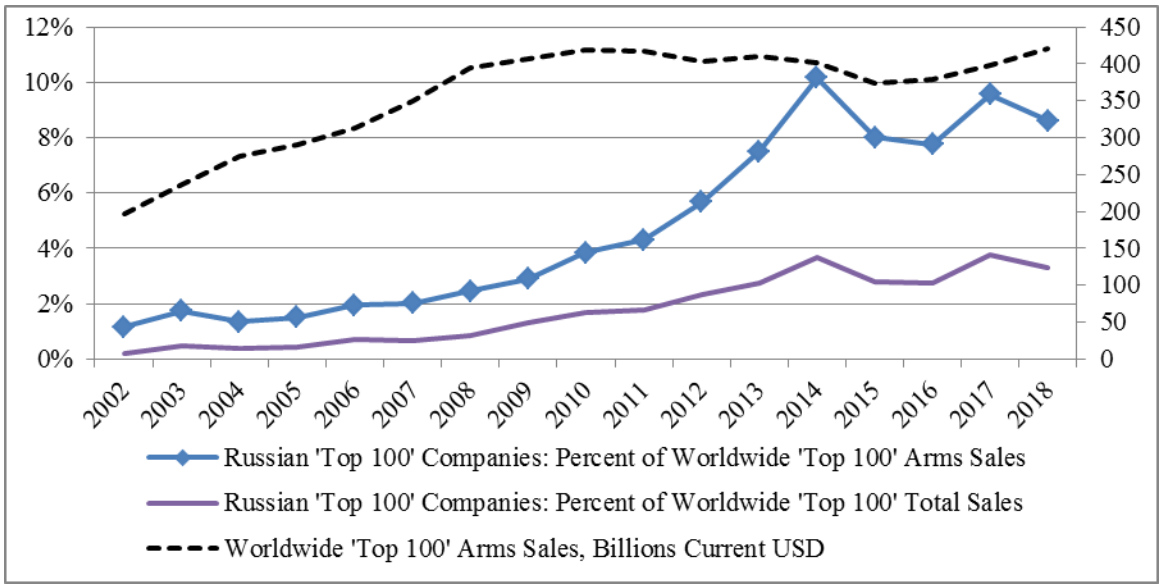
Figure 2 shows these numbers as percentages of total arms production. Demand has grown both at home and abroad. Russian DIS corporations have struggled to diversify, but

[48] SIPRI.

[49] SIPRI. Amounts are adjusted for inflation to 2014 U.S. dollars.

they have certainly found a renewed market for their military products—the reasons for which will be discussed in Section II.D below.

Figure 2. Russian Company Sales as Portion of SIPRI "Top 100" Sales[50]



A final trend, not unique to Russia, is that worldwide defense spending has continued to expand slowly for the last fifteen years, even as Western militaries prepare to downsize.[51] The expansion is due to both modernization and increasing foreign military sales. The Russian defense industry itself, as we have seen, has grown at a much more rapid pace than average.

[50] Adapted from SIPRI, "SIPRI Arms Industry Database."

[51] SIPRI.

C. RUSSIAN ARMS INDUSTRY CAPABILITIES AND MODERNIZATION

The Putin and Medvedev administrations took advantage of Russia's recovering economy in the 2000s to fund a military recovery and modernization. As Figure 3 shows, Russian military expenditures since the late 1990s have increased from three percent of GDP in 1998 to over five percent of GDP in 2015, representing a large increase in its proportion of overall government spending in addition to the absolute increases due to the burgeoning economy.

Figure 3. Russian Military Expenditures as Portion of State Spending and GDP[52]

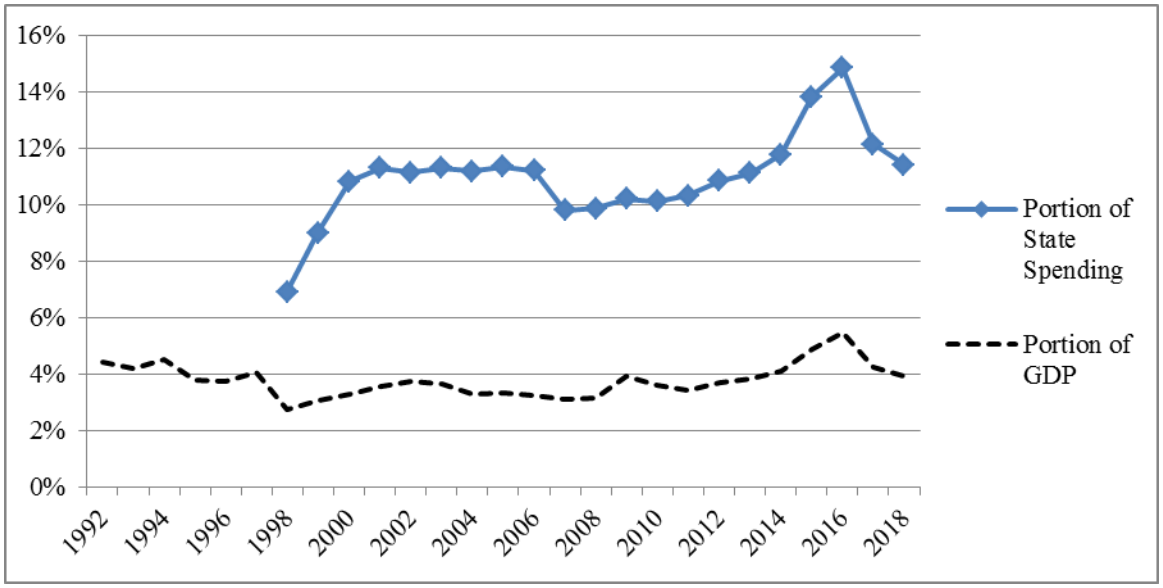
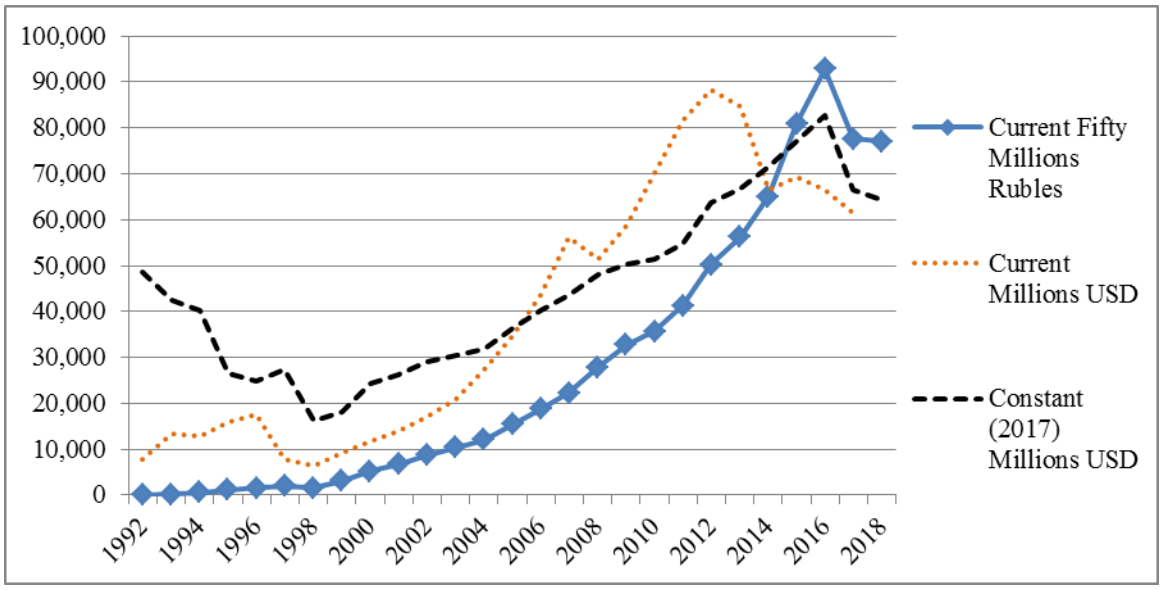


Figure 4 illustrates that, partly due to the rampant inflation of the ruble in the 1990s, the Russian state never significantly *decreased* funding to the military. The rate of increase simply could not keep up with the rate of inflation during the Yeltsin era. However, with inflation under control by the turn of the century and with the energy and heavy industrial sectors booming during the first Putin administration, the military became more solvent in 2008 than in 1998. Since the turn of the century, Russia has attempted to transition from

[52] Adapted from SIPRI, "SIPRI Military Expenditure Database."

reliance on Soviet-era equipment to an emphasis on sophisticated sensors, integrated command and control systems, and high-end weapons and delivery systems. However, Western sanctions imposed following the Putin administration's 2014 annexation of the Crimean peninsula and its continuing involvement in eastern Ukraine took a heavy toll on the Russian economy, causing rapid devaluation of the ruble and probably forcing the recent downturn in military spending. The fact that—five years later—the Crimean annexation still has not spurred significant NATO intervention may also be contributing to lower military spending, which peaked during the timeframe when Western military reaction in Ukraine seemed likeliest.

Figure 4. Overall Russian Military Expenditures[53]



The greatest emphasis has been on development and deployment of more advanced airborne and anti-air platforms, including fifth-generation fighter jets, stealth technology, supersonic and hypersonic cruise missiles, and integrated air defense systems. The replacement of older platforms will likely create a convenient inventory for future exports, while kit-style or other discrete upgrades to existing systems could be sold to states that

[53] Adapted from SIPRI, "SIPRI Military Expenditure Database." The scale selection of fifty millions of rubles was chosen for ease of visual reference against the U.S. dollar.

are using the compatible Soviet or Russian systems. In a 2016 interview, Lieutenant General Viktor Gumennyy, the"commander of PVO-PRO (Air Defense-Missile Defense Troops) and deputy commander in chief of Aerospace Forces, stated that

> The air defense and missile defense system of the Russian Federation's Aerospace Forces has undergone substantial changes in the last few years. Today it can be said that the Antiaircraft Missile Troops, the Radiotechnical Troops, and the Missile Defense Troops are ensuring the secure defense of our state. Igor Yuryevich [also being interviewed] has correctly observed that *a state that does not show concern for its air defense system is quite simply doomed*.[54]

Lieutenant General Gumennyy continues to name a litany of systems undergoing significant upgrades within the Russian air and missile defense forces, including the S-400 (NATO reporting name SA-21 *Growler*) and upgraded S-300 (SA-10 *Grumble*) surface-to-air missile systems, mentioning also the Pantsir-S integrated missile and gun system and development of a "long-range intercept missile" which "will definitely enable any mission set for the air defense and missile defense" forces.[55]

In the maritime domain, Russia has undertaken construction of two new classes of nuclear-powered submarines: the *Borey* or *Dolgorukiy* class, capable of carrying ballistic missiles, as well as the *Severodvinsk*-class fast-attack submarine. The four fleets have also planned the phased replacement of Soviet-era *Sovremennyy*-class destroyers and *Krivak* frigates with twenty to thirty multipurpose *Admiral Gorshkov*-class frigates, the first of which was laid down in 2006.[56] Russian naval forces have also placed increasingly sophisticated stand-off weapons on minor naval platforms, with the first of six *Vasily Bykov* corvettes, capable of carrying the *Kalibr* (NATO reporting name SS-N-27 *Sizzler*) cruise

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[54] "Russian Arms Expert, Aerospace Forces Aide Discuss Developments in Air Defense Systems, Training," Russkaya Sluzhba Novostey Online, trans. Open Source Center, August 21, 2016, OSC ID CER2016082206168001. Italics mine.

[55] Russkaya Sluzhba Novostey Online.

[56] "Russian Navy to Get Project 22350 Frigate Admiral Gorshkov in 2011," Mil.Today, February 26, 2010, http://rusnavy.com/news/newsofday/index.php?ELEMENT_ID=8778.

missile, commissioned in 2018.[57] The ships that these new classes replace will likely be prime candidates for export, as they have been in the past. Finally, according to press reporting, carrier-launched Su-33 *Flanker-D* aircraft have been equipped with smart bomb kit technology—potentially providing a cheap upgrade to bring Soviet-era weapons into the twenty-first century, increasing Russia's ability to conduct precision airstrikes from the sea.[58]

D. IMPACT ON THE SECURITY ENVIRONMENT IN THE NEAR AND LONG TERMS

From a Western perspective, these trends present new challenges regarding Russia. Much ink has been spent over whether Moscow has become a sated power, and if not, at what point it will become one. The problem of interpreting intentions lingers from the Cold War, particularly in light of the apparent aggressiveness of Russian foreign policy in Georgia, Ukraine and Syria. Russian military modernization and expansion also looks problematic in the face of European austerity, increasing nationalism and isolationism, and the possibility of future American withdrawal from Europe.

Western states are also concerned about Russian willingness to export equipment to actors that are neutral or even adversarial toward the United States and its allies: India, China, Vietnam, Iraq, Iran and others. As we have seen above, Russian defense manufacturers have a strong incentive to maximize their weapons sales domestically and internationally. But the Kremlin has a mixed record of overseeing the responsible proliferation of its conventional systems; Russian-manufactured portable air defense systems have landed in the hands of autocrats and non-state actors.

If Moscow tends to seek out opportunities to export Russian weapons systems, then the motivations and of the prospective buyers are worth examining more closely. Customer states may seek to leverage weapons imports for a positive political outcome (e.g.,

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[57] "Advanced Caliber-Carrying Patrol Ship to Join Russian Navy in 2017," Mil.Today, September 2, 2016, http://mil.today/2016/Navy10/; "Russia Commissions First Project 22160 Patrol Ship Vasily Bykov," Naval Today, December 21, 2018, https://navaltoday.com/2018/12/21/russia-commissions-first-project-22160-patrol-ship-vasily-bykov/.

[58] "Media: Russian Ship-Based Aircraft Receive High-Accuracy Bomb Sighting Systems," Mil.Today, September 2, 2016, http://mil.today/2016/Navy11/.

friendlier relations with the supplier or an ally), but others may seek a negative political outcome (e.g., rejection of relations with a third party such as the United States or an attempt to deter China). Some customer states—India, for example—may be pursuing a non-alignment strategy, and as such, they may deliberately seek to balance strategic military relationships with both Western and non-Western powers. From a financial perspective, Russian-built submarines and aircraft may present a more economical choice for developing countries attempting to modernize their own militaries or obtain a new capability; Western aircraft and submarines are costly whether conventional or nuclear. Additionally, while maintaining one's existing military assets is likely within the skill and budget of a smaller state, that state might have neither the means nor the intention of creating the necessary infrastructure for indigenous production of similar assets; metaphorically, many states might prefer simply to buy a car rather than build one.

In the 1990s, for example, Vietnam lacked the infrastructure and personnel training to support a submarine fleet—with the exception of two *Yugo*-class miniature submarines bartered from North Korea—but desired to enhance its maritime domain awareness and its deterrence capabilities in response to the growing power of China in the waters near Vietnam. After waiting several frustrating years to arrange for limited personnel training from India, Hanoi "turned to Russia and reached an agreement in principle to purchase six Project 636M *Kilo*-class submarines," new rather than secondhand, at a total cost of U.S. $2.1 billion—roughly the same cost as construction of a single U.S. *Los Angeles*-class fast attack nuclear submarine.[59] The Russian contract also included options for crew training and the construction and manning of an on-shore maintenance facility. The first submarine arrived late in 2012; although the costs of the project overran initial estimates, so did the scope, as Rosoboronexport agreed to construction of additional submarine infrastructure in Cam Ranh Bay and upgraded the initial weapons load-out of the submarines to include heavier torpedoes and anti-ship cruise missile capability.[60]

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[59] Carlyle A. Thayer, "Russian Subs in Vietnam," U.S. Naval Institute, last modified February 5, 2013, https://news.usni.org/2012/08/20/russian-subs-vietnam.

[60] Thayer.

In addition to providing an affordable contract to Hanoi, Moscow's willingness to provide extensive auxiliary services demonstrates potential value as the technologically best-tailored or adaptable solution across a variety of scenarios. So does the Kremlin's continued interest in bilateral research and development cooperation, such as collaboration with India on the *BrahMos* cruise missile system. This would mark a change from purchasing Russian- or Soviet-made systems during the 1990s and early 2000s, when Russian systems were often decrepit, without reliable parts support, and incompatible with non-Soviet systems: buyer beware.[61]

E. CONCLUSION

The notion of large-scale export of weapons systems for national profit is both old and new. Perhaps it can be traced as far back as the idea of professional smiths and mercenaries, who forged or were weapons that could be wielded by the highest bidder. But like nuclear weapons and space travel, the Russian arms industry in its modern form arose during the Cold War, when the superpowers' extended defensive networks encouraged the growth of large arms industries across multiple developed states.[62]

While these networks were mostly self-contained, the rise of the modern arms industry gradually created a glut of military systems not needed by the Cold War powers, either because such systems had become obsolete with time or simply as a byproduct of excessive productivity. Then the Soviet system collapsed in on itself; when the smoke cleared, the governments of the 1990s no longer had the financial resources to dedicate to cutting-edge weapons research, nor the political will to do so even if they had. This reversal was felt keenly within the arms industries of the Russian Federation, the dominant successor state to the Soviet Union.

Since Russian president Vladimir Putin's ascent to power in Moscow, the Russian defense sector has moved toward a return to significant world influence, albeit increasingly

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[61] Blank, *Rosoboroneksport,* 6–8.

[62] David Mussington, *Understanding Contemporary International Arms Transfers: An Analysis of the Post-Cold War Arms Trade and Supplier Strategies for Limiting Conventional Weapons Proliferation* (London: Brassey's for the International Institute for Strategic Studies, 1994), 3–4.

beholden to the government and thus more closely entangled with state policy at home and abroad. Coupled with assertive Russian foreign policy, this structure poses several unique challenges and opportunities for the West and for the developing world, especially the rapidly developing Asian states. The next chapters analyze three case studies in greater depth: China, India, and Vietnam.

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III. CHINA CASE STUDY

A. CHAPTER SUMMARY

China's "peaceful rise" has been the subject of intense international scrutiny. The world's most populous country relies on foreign energy imports to feed its burgeoning economy, principally from Middle Eastern and Russian sources.[63] Its increase in military might through the 1990s and 2000s was partly attributable to Russian exports of major systems like Sukhoi *Flanker* variant fighter aircraft, *Kilo*-class submarines and *Sovremennyy*-class destroyers in parallel with domestic military production.[64] In the 1990s, Russia was often willing to accept Chinese offset conditions, such as partial payment of contracts with consumer goods rather than currency, as a means of securing work for its anemic defense sector.[65] However, the Chinese defense industry has increasingly undertaken ambitious indigenous development programs, ranging from warships to submarines to land-based missile systems, and has recently favored importation of specialized Russian-made sensors and subsystems over whole platforms.[66]

Imported Russian technology has also been used as a jumping-off point for indigenous Chinese production, whether licensed or not, presumably after a degree of reverse-engineering. For example, the Shenyang J-15 *Flying Shark* fighter jet program is an unlicensed version of the Su-33 *Flanker*, while SIPRI hypothesizes that several naval

63 Olesya Astakhova and Chen Aizhu, "Exclusive: Russia Likely to Scale Down China Gas Supply Plans," Reuters, January 15, 2016, https://www.reuters.com/article/us-russia-china-gas-exclusive-idUSKCN0UT1LG; "China ups oil imports from Russia," RT, last modified February 23, 2016, http://on.rt.com/7579.

64 Bobo Lo, *Axis of Convenience: Moscow, Beijing, and the New Geopolitics* (Baltimore: Brookings Institution Press, 2008), 79.

65 Alexander Sergounin and Sergey V. Subbotin, "Sino-Russian Military-Technical Cooperation: A Russian View," in *Russia and the Arms Trade*, ed. Ian Anthony (New York: Oxford University Press, 1998), 198–99.

66 Stockholm International Peace Research Institute, "Trade Registers," SIPRI, accessed November 15, 2016, https://armstrade.sipri.org/armstrade/page/trade_register.php.

radar and gun systems installed on PLAN frigates may be unlicensed copies of Russian designs.[67]

Despite the specter of unauthorized technology transfer, some authors have argued that "the Russian military itself is coming around to the idea that China poses little threat" from a military standpoint, and the benefits to the defense industry may outweigh the costs of Chinese military development.[68] Beijing maintains a no-first-use nuclear policy and has not expressed interest in northward expansion. The PRC's growing indigenous production capability, however, has certainly impacted Russian profits; the annual export rate from Russia to China was valued by SIPRI at approximately $2.5 billion (TIV in 1990 USD) between 2000–2005, peaking in 2005 at an estimated $3.1 billion, but shrank to $780 million on average during the 2010–2015 period.[69]

This chapter determines that since the 1990s, Chinese arms transfers from Russia have been motivated primarily by technological convenience, and secondarily by strategic and political effects. Specifically, Beijing's long-term priority is to develop the full range of arms production domestically. Moscow has offered a practical means of building indigenous defense capacity, at lower material and time cost than truly independent development but with an acceptably low amount of political baggage. Shaping these dynamics was the fact that Western arms embargoes (enacted in response to human rights violations such as 1989's Tiananmen Square incident) have severely limited Beijing's options for military equipment and technology acquisition during the past three decades. As the Chinese defense sector matures, its reliance on Russian arms imports will continue to decrease. Additionally, under market socialism, arms manufacturers have greater financial incentive to expand their own export capacity, which will likely conflict with traditionally Russian markets. In the political realm, therefore, China will need to signal

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[67] Sam LaGrone, "Officials Confirm Construction of First Domestic Chinese Aircraft Carrier," U.S. Naval Institute, last modified January 4, 2016, https://news.usni.org/2016/01/04/officials-confirm-construction-of-first-domestic-chinese-aircraft-carrier; SIPRI, "Trade Registers."

[68] Lo, *Axis of Convenience*, 79; Sergounin and Subbotin, "Sino-Russian Military-Technical Cooperation," 213. Sergounin and Subbotin discuss Russian cost-benefit thinking and the Chinese preference for production licenses in lieu of "off the shelf" Russian-made inventory.

[69] SIPRI, "Importer/Exporter TIV Tables."

"strategic partnership" with Russia via other means.[70] In the military realm, this will most likely entail an emphasis on bilateral exercises. While Chinese defense-industrial firms will probably seek to collaborate with Russian companies on select advanced projects, the pragmatism of national and defense sector leadership makes collaboration with other advanced weapons-producing countries highly likely as well.

B. SUMMARY OF POLITICAL RELATIONS AND STRATEGIC INTERESTS

1. Imperialism, the End of the Empire and the People's Republic

A thorough analysis of China's defense and foreign policies is well beyond the scope of this paper, but several factors are particularly salient to the development of contemporary Chinese arms industries and import-export patterns. Beijing's strategic defense outlook has been influenced by its geography, dynastic history and, particularly since the nineteenth century, ugly encounters with technologically advanced foreign powers. Like Russia, China has traditionally been a land power, with forays into sea control at various points throughout its history resulting in a number of well-known voyages.[71] Proximate events to the formation of the People's Republic of China, however, included the "century of humiliation" between 1839 and 1949, during which the waning Qing dynasty was overtaken by modern British, French and Japanese empires.[72] While traditional enemies of China had arrived over land from the north and west, the new threat came from the sea. This became one of several factors to shift Beijing's priorities toward defense from seaborne invasion; others included the breakaway of Taiwan from the mainland and the post-World War II superpower status of the United States. Oil-powered maritime transport and air travel influenced global trade dynamics, while the Chinese peasantry—already concentrated in the fertile eastern parts of the country—migrated to

[70] Robert G. Sutter, *China's Rise in Asia: Promises and Perils* (Lanham, MD: Rowman and Littlefield Publishers, 2005), 107; J.D. Kenneth Boutin, "Arms and Autonomy: The Limits of China's Defense-Industrial Transformation," in *The Modern Defense Industry: Political, Economic, and Technological Issues*, ed. Richard A. Bitzinger (Santa Barbara: Praeger Security International, 2009), 217.

[71] Such as the expeditions of Zheng He's fleet to collect tribute from various locations at the rim of the Indian Ocean during the early fifteenth century.

[72] Boutin, "Arms and Autonomy," 213.

coastal cities in search of industrial work. Beijing has accordingly increased investment in developing air and sea power since the establishment of the People's Republic of China in 1949, particularly following Mao's death in 1975, although the army still dominates the military, both numerically and organizationally.

2. The Cold War: Emergence of the Chinese Defense-Industrial Sector

In terms of defense manufacturing, the goal of Party leadership has been to harness China's considerable natural and human resources to become entirely self-sufficient.[73] At its formation, however, the PRC lacked significant defense production capability and was obliged to construct its military with the assistance of arms imports. Prior to the Sino-Soviet split, Moscow furnished all of these imports—often secondhand Soviet equipment, overflow satellite state inventory, or military aid for Chinese forces in the Korean War.[74] Beijing also received license to indigenously produce and assemble a wide variety of Soviet designs, such as the MiG-17 *Fresco* fighter aircraft, Mi-4 *Hound* helicopter, T-54 tank, *Whiskey*-class submarines, and SA-2 *Guideline* surface-to-air missile system.[75] Chinese arms manufacturers were assiduous students of the Soviet defense-industrial model, such that "by 1960 [China] was self-sufficient in many categories" of weapons production.[76]

Soviet arms transfers dwindled after the Sino-Soviet split of 1960, as shown in Figure 5. Whereas 1950s China had received an average of $2.7 billion worth of military equipment each year from the Soviet Union, import values fell to an average of $355 million during 1961–1968 and dried up altogether by 1969.[77] Although Mao's death later resulted in a degree of political normalization between Beijing and Moscow, with relations thawing further during the border troop drawdowns of the Gorbachev era, the improving

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[73] Boutin, 212.

[74] SIPRI, "Trade Registers."

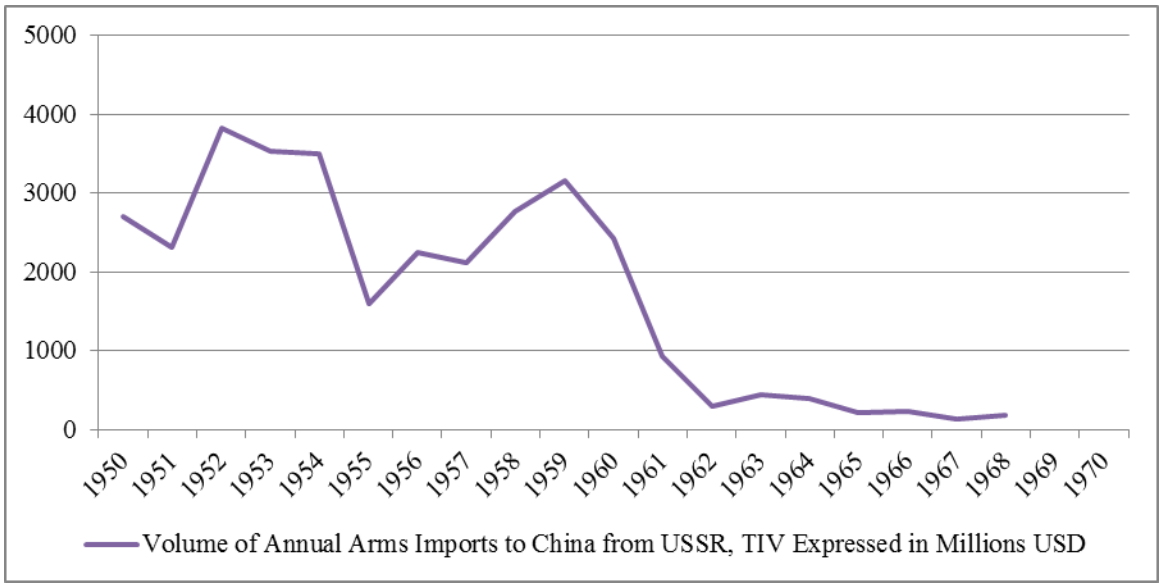
[75] SIPRI. I have generally used NATO designations and reporting names in the body of this paper for ease of reading; however, for many of the platforms in this section, the Chinese or Russian designation is also in popular use.

[76] Boutin, "Arms and Autonomy," 213.

[77] SIPRI, "Importer/Exporter TIV Tables."

bilateral relations did not result in resumption of pre-split levels of arms transfers from the USSR to the PRC.[78]

Figure 5. Soviet Arms Exports to China, SIPRI Trend-Indicator Values (TIV) in Millions USD, 1950–1970[79]



During the mid-1960s, Beijing began to seek arms suppliers elsewhere—notably from France, West Germany and Israel—although arms transfers from these countries never approached Soviet rates, partly because of the gains in self-sufficiency the Chinese defense-industrial sector had achieved.[80] CATIC, the Chinese state-owned aerospace enterprise, made overtures toward U.S. and UK arms manufacturers in the 1980s, although their goal was mostly research transfer rather than acquisition of actual American or British systems.[81]

[78] Sutter, *China's Rise in Asia*, 109.

[79] Adapted from SIPRI, "Importer/Exporter TIV Tables." NOTE: All TIV tables use trend-indicator values expressed in constant 1990 U.S. dollars, a unit that is unique to the SIPRI databases, rather than actual financial cost (either real or adjusted for inflation). See Footnote 10.

[80] SIPRI, "Trade Registers;" Boutin, "Arms and Autonomy," 219.

[81] Boutin, 219.

Chinese arms acquisitions in the 1960s-1980s consisted of a blend of direct imports and licensed indigenous production, in keeping with the pursuit of self-sufficiency.[82] Additionally, the systems acquired during this era tended to be newer and more sophisticated for their time than the secondhand Soviet imports had been, in keeping with the post-1975 push from Communist Party leadership for military modernization.[83] The 1960s also saw a rise in Chinese arms exports to states outside Beijing's immediate sphere of influence, particularly to countries in the Middle East and Africa—markets in which the modern Chinese defense-industrial sector remains interested.[84]

China's arms imports from the Soviet Union were negligible between the start of the border war in 1969 (the low point in bilateral relations following the Sino-Soviet split) and 1990, the year Beijing placed its first order in decades for Soviet aircraft. By the time of the USSR's collapse, China had scheduled the import of several dozen Soviet aircraft, ranging from the Su-24 *Fencer* and Su-27S *Flanker* ground attack fighters to the Mi-8/17 *Hip* transport helicopter, and air-to-air missiles. The Russian successor state honored outstanding Soviet agreements, some of which entailed significant offset imports of Chinese consumer goods.[85]

Nonetheless, in the final decade of the Cold War era, "China's military modernization was … focused primarily on overcoming the PLA's obsolescence;" economic growth rather than developing a cutting-edge defense industry was deemed the country's "most pressing strategic goal."[86] PRC-manufactured arms tended toward strictly "evolutionary" developments from existing systems—progressing from licensed copy to

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82 SIPRI, "Trade Registers."

83 Boutin, "Arms and Autonomy," 219.

84 SIPRI, "Trade Registers." For example, SIPRI identifies Chinese arms exports to Albania (beginning in 1956, but picking up in 1961), Pakistan (1964), Sudan (1968), Tanzania (1970), Congo and Romania (1971), Guinea and Sierra Leone (1973), Egypt (1975) and Zambia (1979).

85 SIPRI; "Russian President's Visit may Boost China Trade for Yeltsin, Whom Chinese Leaders Once Branded the `new Czar,' the Visit is a Chance to Bolster Russia's Growing Trade with China," *Christian Science Monitor*, December 16, 1992, ProQuest.

86 U.S. Congress, U.S.-China Economic and Security Review Commission, *2014 Report to Congress of the U.S.-China Economic and Security Review Commission*, 113th Cong., 2d sess., 2014, Committee Print 282, http://www.uscc.gov/files/000931.

unlicensed copy to indigenously-designed follow-on platforms—rather than experimenting with novel or cutting-edge technology.[87] Chinese manufacturers often reverse-engineered licensed designs to provide a starting point for modifications and indigenously produced successor systems. The Chinese defense-industrial sector has yet to shake off this tendency in the 21st century, in part because the advent of the Internet has made foreign research and development more easily accessible to Beijing.

3. The 1990s: Modernization, Marketization and the Resurgence of Russian Arms Imports

After the Cold War, relations with Moscow provided to Beijing a means of accelerating the pursuit of its own interests – a means to an end rather than an end *per se*. In the 1990s, China's arms manufacturers suffered from many of the same problems as their Soviet counterparts: "outdated … facilities, overcapacity, unprofitability, and weak accountability."[88] Beijing's state-planned business model and insistence on vertical integration of the defense sector—measures designed to foster arms manufacturing autonomy—tended to stifle innovation.[89] The Jiang administration was eager for China to participate as a major power in the new, multipolar world order that Party officials believed would emerge after the collapse of the Soviet Union. However, Chinese designs of the time, especially those designed for export, had a reputation as inexpensive but unsophisticated. Military leadership believed these would be suitable for small nations in the developing world, but not for a major power about to enter the twenty-first century.

Unlike post-Cold War Russia, however, since 1991 the Chinese defense industrial sector has modernized fairly successfully due to marketization reforms, increasing civil-military research integration, and a growing export market (which will likely come into increasing conflict with traditionally Soviet/Russian customers). It accomplished this modernization in significant part through the resumption of arms imports and military-technical cooperation with foreign nations, particularly Russia.

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87 Boutin, "Arms and Autonomy," 214.

88 Boutin, 216.

89 Boutin, 214–15.

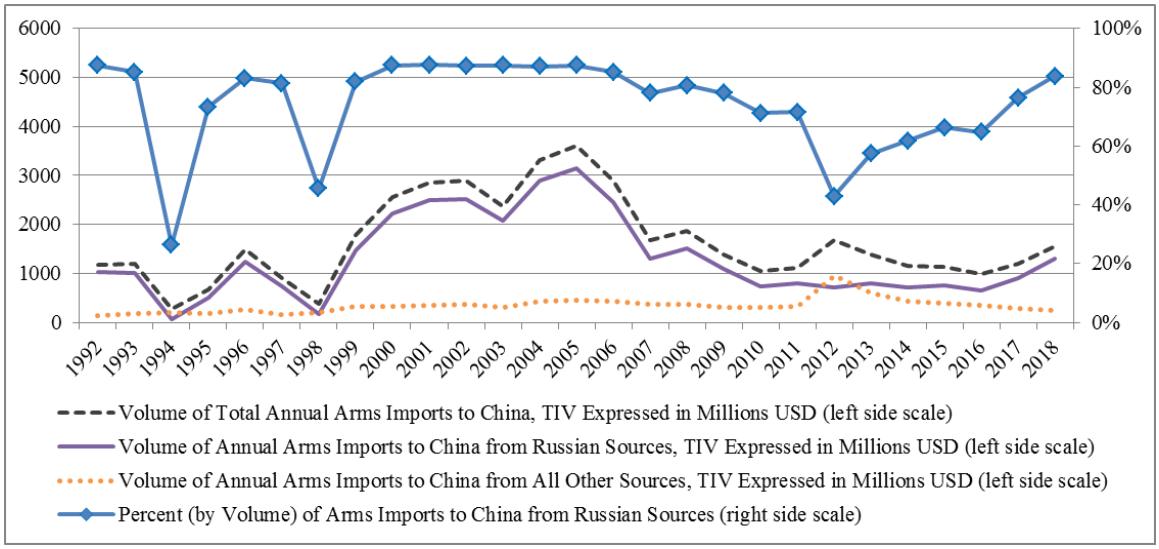
4. 2000 to Present: The Turning Point for Self-sufficiency

China has expanded both its arms imports and indigenous arms production capability in the twenty-first century. Vladimir Putin's orders to expand the defense industry in Russia dovetailed nicely with the Jiang and Hu administrations' desire to prepare for a Taiwan crisis and enhance the military's underdeveloped stand-off weapons capability.[90] The resultant upswing in imports was a temporary trend—a means to fill critical force modernization needs—and has been drawn down and refined since 2005. SIPRI estimates that the value of foreign arms deliveries to China peaked in 2005 at approximately U.S. $3.5 billion, with over eight-five percent of that value originating from Russia.[91] While Russian imports fell in following years, arms transfers from Western suppliers have remained fairly stable, since they are typically highly specialized, and have occupied a larger share of the Chinese import market. Arms imports continued to highlight Beijing's interest in standoff defense systems, including maritime systems as leadership strengthened claims for areas within the Nine-Dash Line. Indigenous production, however, has grown in both volume and scope, enabled by the rapid expansion of the Chinese economy at large and in keeping with PRC leadership's goals for defense-industrial sector self-sufficiency. Figure 6 shows the decline in overall Chinese arms imports as the indigenization efforts continue to mature.

90 Sutter, *China's Rise in Asia*, 121.

91 SIPRI, "Trade Registers."

Figure 6. Russian Arms Exports to China, SIPRI Trend-Indicator Values (TIV) in Millions USD, 1992–2018[92]



C. ARMS TRADE PATTERNS

1. Aircraft

Although the extensive offsets make determining the financial details of Sino-Russian arms transfers more difficult, it is clear that during the 1990s China's main foreign source of military equipment was Russia, and that Chinese imports during this decade were aircraft-centric. SIPRI estimates the total value of Chinese arms imports between 1992 and 1999 at approximately $7.8 billion in 1990 USD, with Russia providing nearly 80 percent of this value.[93] (Transfers from other former Soviet Union states accounted for another 2.3 percent; the remainder of Chinese imports originated in Western states or Israel.[94]) The arms trade reflected in part the upswing at all levels of bilateral trade between China and post-Soviet Russia, estimated at $8 billion in 1993.[95] Likewise, while Beijing relied

[92] Adapted from SIPRI, "Importer/Exporter TIV Tables." NOTE: All TIV tables use trend-indicator values expressed in constant 1990 U.S. dollars, a unit that is unique to the SIPRI databases, rather than actual financial cost (either real or adjusted for inflation). See Footnote 10.

[93] SIPRI, "Trade Registers."

[94] SIPRI.

[95] Steven Erlanger, "Russia Warms Up an Old Romance," *New York Times*, Late Edition (East Coast), Dec 29, 1995, ProQuest.

heavily on Russian imports, Moscow depended on the Chinese market to float its defense industries. According to SIPRI data, sales to China accounted for twenty-five percent of the value of Russian arms exports between 1992 and 1999, while *The Economist* and *The Financial Times* reported in 1997 that about one third of Rosvooruzheniye's current and near-term future revenues were of Chinese origin.[96]

Throughout the 1990s, China imported primarily aircraft, associated missiles, and air defense systems from Russia, accounting for some seventy percent of its total arms transfers in 1997.[97] Aircraft included relatively sophisticated airframes such as the fourth-generation Su-27SK Flanker B fighter—which Moscow provided both directly, and in the form of kits for assembly in China with possible export to third parties.[98]

2. Maritime Platforms

By the latter half of the 1990s, Beijing's national defense posture shifted from the land-centric counter-invasion strategy of the Cold War era to an offshore defense policy informed by maritime economic interests, the Third Taiwan Strait Crisis and the preeminence of the United States Navy.[99] The Chinese defense-industrial sector of the 1990s could mass produce lower-end systems, but lagged behind the established powers in more advanced research and development, especially in naval missions. The Jiang administration sought to plug capability gaps with Russian imports, prioritizing "quality over quantity" to establish a modern blue-water navy.[100]

The People's Liberation Army Navy (PLAN) procured relatively sophisticated Russian ships and submarines to support the strategic shift, including the first of ten *Kilo* class attack submarines in 1995 and heavily armed *Sovremennyy* class destroyers starting

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96 SIPRI, "Importer/Exporter TIV Tables;" "Can a Bear Love a Dragon?" *The Economist* 343, no. 8014 (April 26, 1997): 19–21, ProQuest; Chrystia Freeland, "Arms Deal Boosts Russia-China Ties," *Financial Times*, August 28, 1997, ProQuest.

97 Nickolay Novichkov, "Russian Arms Technology Pouring into China," *Aviation Week and Space Technology* 146, no. 20 (May 12, 1997): 72, ProQuest.

98 Novichkov.

99 Sutter, *China's Rise in Asia*, 107.

100 Sutter, 69.

in 1999. Unlike the kit construction of contemporary aircraft and Soviet-designed *Ming* (*Romeo*) class submarines in the 1960s, the new orders were built or modified in Russia and delivered after sea trials to the PLAN. This type of procurement cycle possibly contributed to a slower pace of technology transfer to the Chinese defense-industrial sector in comparison to aviation and air defense systems. Nonetheless, importation of Russian naval platforms and the associated support personnel allowed Beijing to apply lessons learned to its domestic shipbuilding programs, like the concurrent *Song* class attack submarine project, which had languished in development despite assistance from other nations. It would later apply a similar technique to jumpstart the carrier program. As China entered for the twenty-first century, it laid the groundwork for a greater level of arms production self-sufficiency.

The PLAN and PLAAF took delivery of eight more Project 636 (ASCM-capable) *Kilo* class submarines, two *Sovremennyy* destroyers, and dozens of Su-30MKK *Flanker* aircraft from 2004–2006 as part of a U.S. $4 billion deal with Moscow brokered in 2002.[101] China also purchased Soviet-era equipment from other former USSR states, including Ukraine, Uzbekistan and Belarus; several of these arrangements, however, were made with Russian mediation. Transfers involving new construction equipment (primarily aircraft and engines) from Western states were dwarfed by Sino-Russian arms trade levels but also peaked in the mid-2000s, averaging $355 million in value annually from 2004–2006.[102] Like Russian arms deals, they often stipulated that some production occur under license within China or resulted in copycat production in China.

Despite its large surface and submarine fleets, however, China notably lacked a functional aircraft carrier—a robust power projection tool – until recent years. In 1998, the PLAN purchased a partially finished *Kuznetsov* class carrier from Ukraine to launch its

[101] John Pomfret, "China to Buy 8 More Russian Submarines," *Washington Post*, June 25, 2002. https://www.washingtonpost.com/archive/politics/2002/06/25/china-to-buy-8-more-russian-submarines/eaec2e3e-fe7a-47a4-ba29-ac42a18f60bb.

[102] SIPRI, "Trade Registers."

carrier program.[103] The Navy has operated the rebranded *Liaoning* semi-experimentally since its 2012 commissioning while incorporating several minor modifications into its first indigenously designed aircraft carrier (*Type 001A*), which was launched in early 2017 and is expected to enter service by 2020.[104] The new project is still based on the *Kuznetsov* class – its significance does not lie in revolutionary design features, but as proof of concept that the Chinese defense-industrial sector can produce a carrier independently. The ability to support an active aircraft carrier program and to produce a carrier indigenously entails a high level of operational and logistic maturity within the PLAN and Chinese defense sector, respectively. Chinese media have also noted the prestige of entering the carrier club.[105] Thus the PLAN's nascent aircraft carrier building program blends China's classic incremental approach to weapons development with its more recent focus on rapid modernization, innovation and achieving major power status.

Advancement of its shipbuilding programs signifies that Beijing is closing the naval technology gap that prompted many of the Soviet and Russian imports of previous decades. The Chinese defense sector now typically exports more ships than it imports from abroad. Between 2000 and 2007, exports of military ships from China averaged U.S. $47 million in value each year according to SIPRI estimates; since 2010, that average has increased to U.S. $390 million. The increase is attributable partly to the sale of second-hand combatants and patrol craft, and partly to new construction destined for export, such as Pakistan's U.S. $4-5 billion order of eight *Yuan* class submarines in 2016.[106]

3. Air Defense Systems

Beijing has maintained interest in importing advanced Russian sensors and missile systems that are compatible with Russian-designed platforms already in use in China. In

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[103] Given that only two hulls of this class were ever laid down, with the other hull still in active service in the Russian Navy, sourcing a Soviet-era carrier from Ukraine rather than Russia seems clearly to have been a necessity rather than an indication of preference.

[104] "China Launches Second Aircraft Carrier," *Xinhua*, April 26, 2017, http://news.xinhuanet.com/english/2017-04/26/c_136237552.htm.

[105] *Xinhua*.

[106] Franz-Stefan Gady, "China Confirms Export of 8 Submarines to Pakistan," *The Diplomat*, October 19, 2016, https://thediplomat.com/2016/10/china-confirms-export-of-8-submarines-to-pakistan/.

2015, the two countries negotiated a U.S. $3 billion agreement to procure up to six S-400 or SA-21 *Growler* systems in 2015, while Chinese and Russian developers likely collaborated on a modified AS-18 *Kazoo* anti-ship cruise missile designed for the Chinese variant of the Su-30 *Flanker*.[107]

D. FORMAL AND INFORMAL ARRANGEMENTS

Many details pertaining to the Sino-Russian defense relationship – particularly in contrast to the Indo-Russian defense relationship – are notoriously difficult to determine due to general lack of transparency within the Chinese military and DIS, as well as oversight of the media by the state. This section, therefore, is certainly not an exhaustive description of the accommodations made by the Russian government and supplier organizations in Sino-Russian arms deals. Nonetheless, it is clear that both states made a wide variety of arrangements over the decades to facilitate arms conventional arms transfers to China.

1. Economic/Commercial Accommodations Made by Russia

a. Offsets

The Yeltsin administration, eager to find arms customers in the early 1990s and to satisfy domestic consumer demands, used several types of offsets in exchange for its arms exports to China. Chinese credit to Russia was estimated at $1.07 billion in October 1992, with arms sales expected to help close the gap.[108]

b. Maintenance and Personnel Training

In addition to permitting commodity imports as barter payment, Yeltsin's government frequently incorporated pre-delivery refurbishment for secondhand systems,

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[107] Franz-Stefan Gady, "China Makes Advance Payment for Russia's S-400 Missile Defense Systems," *The Diplomat*, March 22, 2016, https://thediplomat.com/2016/03/china-makes-advance-payment-for-russias-s-400-missile-defense-systems/; Paul Schwartz, *Russia's Contribution to China's Surface Warfare Capabilities: Feeding the Dragon*, ISBN 978–1-4422-5879-2 (Lanham, MD: Rowman and Littlefield, 2015), 19, https://www.csis.org/analysis/russia%E2%80%99s-contribution-china%E2%80%99s-surface-warfare-capabilities.

[108] *Christian Science Monitor*, "Russian President's Visit may Boost China Trade for Yeltsin."

post-delivery maintenance and parts support as elements of transfer deals. These measures indirectly affected the Chinese defense-industrial sector by providing a higher caliber of imports and providing a reliable, though limited, source of technical support in the persons of Russian maintenance personnel. Furthermore, the Russian Ministry of Defense claimed in 2016 that over "3,600 Chinese officers" had been trained in Russia's "military academies and training centers."[109]

2. Technological Accommodations Made by Russia

a. Indigenous Production

Although Russian officials in the mid-1990s claimed that "no transfer of technology" occurred, Moscow helped to inject technological expertise directly into the PLA and defense-industrial sector through indigenous production licenses.[110] (Beijing was also willing to simply steal proprietary information; the Cox Report, published in the United States in 1999, found that Chinese agents had obtained sensitive information on ballistic missile and nuclear weapons design.[111]) Since 2010, importation of Russian equipment has occurred at a much lower rate than any time in the previous decade. The profile of Russian imports also more closely aligns with what China imports from other states, focused on transport aircraft, helicopters and engines; the ship- and submarine-building windfall of the 1990s and 2000s, which overwhelmingly benefited Russian arms manufacturers, is over.

b. Joint Weapons Development

Russia did not undertake widely recognized joint research or development efforts with Chinese defense enterprises, although there has probably been some specialized

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109 Vasily Kashin, "The Current State of Russian-Chinese Defense Cooperation" (occasional paper, Center for Naval Analyses, 2018), 20, https://www.cna.org/CNA_files/PDF/DOP-2018-U-018184-Final.pdf.

110 Erlanger, "Russia Warms Up an Old Romance."

111 U.S. House of Representatives, *Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China*, U.S. House of Representatives Report No. 105–851 (Washington, DC: U.S. Government Printing Office, 1999), ii-xxvii, https://www.gpo.gov/fdsys/pkg/GPO-CRPT-105hrpt851/pdf/GPO-CRPT-105hrpt851.pdf.

collaboration, i.e., modifications to the AS-18.[112] Beijing has been willing to participate in targeted research projects with multiple other nations, although it is wary of fielding the results of such collaboration in its own military.[113] Entering into research agreements without committing to deploying the results provides China a low-cost research boost, while helping to foster its reputation as a reliable business partner and "lead nation" for sharing military technology.[114] The participation of state-owned enterprises in "transnational structures for technological … diffusion" in recent years has accelerated research and development across the civilian economy, with positive repercussions in dual-use technologies for the defense-industrial sector.[115] China has also become a major arms exporter in its own right. It overtook France in 2012 to become the world's third-largest exporter (behind only the United States and Russia), and Chinese-built weapons systems have been sold to over forty countries in the last decade.[116]

3. Overtly Political/Strategic Accommodations Made by Russia

Bilateral Military Exercises: While China and Russia do not have any standing treaties or declarations of friendship, the two nations do share an extensive land and sea border and have multiple opportunities for multilateral cooperation. China has hosted a series of multilateral exercises known as PEACE MISSION since 2005, with a naval element since 2012.[117] Russia was the first foreign partner involved in PEACE MISSION,

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[112] Schwartz, *Russia's Contribution to China's Surface Warfare Capabilities*, 19.

[113] Boutin, "Arms and Autonomy," 221.

[114] Boutin, 221.

[115] Boutin, 217.

[116] Aude Fleurant, Pieter D. Wezeman, Siemon T. Wezeman and Nan Tian, "Trends in International Arms Transfers, 2016," Stockholm International Peace Research Institute fact sheet, 2017, https://www.sipri.org/publications/2017/sipri-fact-sheets/trends-international-arms-transfers-2016; SIPRI, "Trade Registers."

[117] Kashin, "The Current State of Russian-Chinese Defense Cooperation." 17–19.

though other nations have since joined as well.[118] Chinese forces recently participated in VOSTOK 2018, a massive Russian joint exercise.[119]

E. OUTLOOK

In the Cold War era, the arms trade functioned as an element of China's hedging strategy and pursuit of a multipolar world power structure—a means of ensuring the nation would never endure another century of humiliation, while keeping both the Soviet Union and the West at arm's length, unlike its Korean and Japanese neighbors. In the decades following the Cold War, Russian arms manufacturers supplied a convenient way for China to reap the benefits of revising its security policies and modernizing its military forces, despite lacking the indigenous capacity to do so at the desired rate. From Moscow's perspective, arms transfers provided the Russian economy a critical injection of monetary income and consumer goods, albeit at an opportunity cost.

Under Walt's framework for alliance formation, states align with outside entities to balance a perceived threat.[120] However, states might also attempt to neutralize external threats through internal reforms, such as military buildup. Measures taken to increase one's own soft power vis-à-vis a potential threat state could also be interpreted as a form of balancing behavior under Walt's framework. China has undertaken multiple kinds of balancing acts. Leadership in Beijing surely interpret the United States as the greatest kinetic threat to China's ascension as a global power. With the world's most powerful military and a robust forward presence, the American armed forces are better equipped than any other nation's to counter Chinese territorial expansion or incursions in Taiwan. Much of Chinese twenty-first century military policy has focused on building a forward presence of its own as well as implementing anti-access and area denial strategies, which are particularly potent against archetypal American force structures (like carrier strike groups) that still depend on mobile air power and unhindered lines of communication. Just

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118 Kashin, "The Current State of Russian-Chinese Defense Cooperation." 17–19.

119 Rajeswari Pillai Rajagopalan, "The Russia-China Military Exercise: Implications for Asian Military Balance," Observer Research Foundation, September 13, 2018, https://www.orfonline.org/expert-speak/44164-the-russia-china-military-exercise-implications-for-asian-military-balance/.

120 Walt, *Origins of Alliances*, 5, 21–22.

as importantly, however, Beijing has attempted to increase Chinese influence on the world stage through a variety of soft power measures ranging from international trade to infrastructure projects in developing nations.

Today, China is most invested in fueling its own geopolitical ascent through economic relations with its Western trading partners, especially the United States. Sino-Russian trade remains anemic by comparison, although this is restricted by the Russian rather than the Chinese economy.[121] Beijing has a vested interest, however, in maintaining regional stability by staying on good terms with its northern neighbors. Chinese leadership have often taken opportunities to demonstrate the independence of their interests from those of the West, sometimes by signaling warmer relations with Russia.[122] As the two physically largest countries in Asia, China and Russia will inevitably have several avenues for cooperation on common security problems, including their extensive shared border and separatist movements in central Asian provinces. Continued arms transfers could signal willingness to collaborate in the security field beyond these obvious opportunities, as could measures such as bilateral military exercises emphasizing integrated operations – which China and Russia have already undertaken.

In the future, the threat of a politically non-aligned, economically and militarily ascendant China may alarm Russian leadership too much to perpetuate the arms trade relationship despite the economic benefits of doing so, particularly if Beijing's and Moscow's strategic interests are at odds. Some Russian general staff officers and civilian officials have raised concerns.[123] Conversely, the Chinese defense sector has become less dependent on Russian participation than it was in the 1950s through early 2000s. As this

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[121] A. J. G. Simoes and C. A. Hidalgo, *The Economic Complexity Observatory: An Analytical Tool for Understanding the Dynamics of Economic Development, Workshops at the Twenty-Fifth AAAI Conference on Artificial Intelligence* (2011), https://atlas.media.mit.edu/. Sino-Russian bilateral trade was valued at U.S. $65 billion in 2016. For comparison, US-Chinese trade was valued at U.S. $500 billion and German-Chinese trade at U.S. $150 billion in 2016. Also, while China ranks as the largest importer from and second-largest exporter to Russian markets, Russian trade accounts for less than three percent of the Chinese import/export economy.

[122] Sutter, *China's Rise in Asia*, 117.

[123] Marlène Laruelle, "Russia Facing China and India in Central Asia," in *China and India in Central Asia: A New "Great Game"?*, ed. Marlène Laruelle (New York: Palgrave Macmillan, 2010), 14; Sutter, *China's Rise in Asia*, 119.

"techno-nationalist state" continues its quest for "defense-industrial self-sufficiency," China may be able to leverage Russian arms imports as a bargaining chip to extract favorable trade or political promises from Moscow.[124] In light of the patterns of weapons development in the Chinese defense sector discussed above, however, it is unlikely that Chinese arms manufacturers will be able to supply the kind of creative thought or revolutionary advancement that would completely obsolesce Beijing's reliance on arms imports despite the aspirations of the ruling cadres. Limited, narrow-scope relationships with a variety of suppliers seems the most likely course for the future of Chinese arms transfers.

It is also unlikely that China's situation as a rising world power with distant-seas ambitions will be replicated in the next several decades – meaning that the pattern of Sino-Russian arms transfers does not provide a good example for predicting future Russian arms customers. The other major power in Asia, India, also has an extensive history of military cooperation with Russia, but there are significant differences between Delhi's and Beijing's development of their defense-industrial sectors. These differences are covered in Chapter IV.

[124] Boutin, "Arms and Autonomy," 212.

IV. INDIA CASE STUDY

A. CHAPTER SUMMARY

As another rising power with a large population, growing economy and energy dependence on Russia and the Middle East, India has now become Russia's most robust export market.[125] New Delhi frequently favors non-alignment with respect to major world powers, pursuing a policy of "interest-based bilateralism," although its relations with Moscow have been cordial since well before the 1971 treaty of friendship.[126] India's position along crucial Indian Ocean trade routes is potentially troubling to a China increasingly dependent on foreign commerce, and the Chinese military buildup has been viewed with concern in New Delhi. Additionally, India has been driven closer to Russia due to the U.S.-Pakistan partnership during the Global War on Terror, although American diplomats were careful to hedge support for Islamabad due to its more controversial activities.[127]

This chapter concludes that Indian arms transfers from Russia have been motivated foremost by sheer industrial necessity, but are also strongly influenced by a desire to maintain political goodwill. China's rise in the Indo-Pacific is the primary driver of both. Like China, India has undertaken ambitious military modernization programs to include an indigenous aircraft carrier program, but the Indian defense industry has been plagued with sluggish indigenous acquisition and production processes as well as interdepartmental budgetary disputes.[128] China's buildup places additional pressure on India's chances of catching up versus obsolescing militarily. Russia thus remains a favored arms trade partner out of practical as well as political reasons. Cooperation with Russia takes the form of imports, ranging from short-range missile systems to the lease of one *Akula*-class nuclear attack submarine; licensed Indian production of Russian designs like the Su-30MK and Su-

[125] Malone, *Does the Elephant Dance?* 239–241; SIPRI, "Importer/Exporter TIV Tables."

[126] Malone, *Does the Elephant Dance?* 235, 244.

[127] Sumit Ganguly, "The Start of a Beautiful Friendship?: The United States and India," *World Policy Journal* 20, no. 1 (March 2003):28, ProQuest.

[128] Anthony, "Trends in Post-Cold War International Arms Transfers," 33.

30MKI *Flanker* variants; and joint development projects like the *BrahMos* anti-ship cruise missile.[129] The Russian and Indian navies also participate in an annual to biannual exercise known as INDRA.[130]

Collaboration along similar lines will likely remain high as the Indian economy booms and China continues to develop militarily in eastern Asia. According to SIPRI estimates, Russian arms exports to India have generally increased in volume over the last 15 years, averaging U.S. $1.3 billion annually during the 2000–2005 period and growing to an average of U.S. $2.75 billion in 2010–2015.[131] Outside these limited lines of cooperation, however, Moscow and New Delhi have relatively weak institutional and economic ties to cement their 2000 declaration of strategic partnership.[132] India is also seeking to become an arms exporter in its own right. Success in this field implies that the defense-industrial sector has the capacity to produce most or all of the components; thus, increased exports will likely coincide with less reliance on foreign arms suppliers, and fewer transfers from Russia.

B. SUMMARY OF POLITICAL RELATIONS AND STRATEGIC INTERESTS

1. The Cold War: Military-Technical Cooperation…and Dependence

After the end of British rule and the acrimonious partition of India and Pakistan in 1947, the Nehru administration implemented a policy of non-alignment with the superpowers of the Cold War. Non-alignment has been marked by the desire on India's part to balance its location as a bridge between Europe and Asia, its border conflicts with neighboring nations, its institutional similarities to the West, and its overlapping energy and security interests with those of other powers in Asia.[133] This philosophy has remained

129 SIPRI, "Trade Registers."

130 "INDRA Navy-18 Concludes in Bay of Bengal," Indian Navy, last modified December 17, 2018, https://www.indiannavy.nic.in/content/indra-navy-18-concludes-bay-bengal.

131 SIPRI, "Importer/Exporter TIV Tables."

132 Petr Topychkanov, "Russian Policy on India and South Asia," *Moscow Defense Brief*, no. 33 (2013), http://www.mdb.cast.ru/mdb/1-2013/item1/article1/.

133 Malone, *Does the Elephant Dance?* 238–240.

in Indian political thought through the present to varying degrees of prominence with respect to the Soviet Union, the successor state of Russia and the United States.

Starting as soon as the 1950s, geostrategic conflicts between India and China—sharing over two thousand miles of land border—emerged, eventually erupting into the Sino-Indian War in 1962. Concurrently, Moscow made friendly overtures to the Nehru administration after the Sino-Soviet split of 1960, while India had come to view the United States as an "unreliable partner" vis-à-vis security issues due to the establishment of American diplomatic and military relations with Pakistan almost immediately after independence.[134] These threat factors, combined with New Delhi's interests in emphasizing its own independence from Great Britain and its struggle to establish trade ties with the nascent European Community, drove India toward a productive defense-oriented relationship with the Soviet Union during the early Cold War period.[135]

The two nations began a military-technical cooperation agreement in 1962, and followed up in 1971 with the Indo-Soviet Treaty of Peace, Friendship and Co-operation. The non-aligned state, ironically, became dependent almost exclusively on Soviet arms imports to supply its military.[136] According to SIPRI, India was the single greatest recipient of both Soviet and global arms trade during the Cold War, accounting for nine percent of the USSR's overall arms export activity, including transfers to other Warsaw Trade Organization states.[137] Since 1991, Indian and Russian interests with respect to energy and security in central Asia remain aligned at their best, and are not mutually exclusive at their worst. New Delhi and Moscow have continued to define their strategic partnership along these principle lines into the twenty-first century.[138]

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134 Malone, 235.

135 Malone, 235.

136 Ganguly, "The Start of a Beautiful Friendship?" 25–26.

137 SIPRI, "Importer/Exporter TIV Tables." Poland, Syria, China (despite a drastic trade decrease following the Sino-Soviet split), Iraq, East Germany and Czechoslovakia are the runners-up.

138 Malone, *Does the Elephant Dance?* 235.

2. The 1990s to Present: New Growth after the Economic Crisis

The USSR's collapse coincided with a period of decreased Indo-Russian defense relations. Russia looked inward as it struggled to democratize and de-escalate with the West, and several erstwhile regional powers sought opportunities to become major world players under a new multipolar world order. Beginning in 1991, Indian Prime Minister Rao's administration sought to bring the Indian state back from the brink of bankruptcy by implementing sweeping liberal market reforms, resulting in rapid economic growth.[139] Nonetheless, Indo-Russian military and technical cooperation endured as the keystone of the new bilateral relationship. During a 1993 state visit to India, officials of the Yeltsin and Rao administrations reaffirmed the 1971 friendship treaty (though in feebler form) as well as their commitment to transfer dual-use rocket technology from Russia to India, which had prompted a two-year U.S. ban on sales of sensitive technology to either nation the year prior.[140]

The average volume of Russian arms transfers to India during the five years immediately following the Cold War fell by seventy-five percent from the 1987–1991 average of nearly U.S. $2.5 billion.[141] This reflected an overall halving of arms imports by India during this period from all suppliers, due in large part to restrictions put on Delhi's purchasing power following the 1991 economic crisis, as well as a slight relative drop in imports sourced from Russia and other former Soviet states, whose defense manufacturers were undergoing crises of their own.[142] Arms transfers to India remained low through the following decade, reaching late 1980s levels in 2003 but not exceeding them until 2010, as the extensive arms sales deals whose groundwork was laid in the mid-2000s came to fruition.[143] Figure 7 shows this growth. Explosive economic growth in India during this

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[139] David Malone and Rohan Mukherjee, "India-US Relations: The Shock of the New," *International Journal* 64, No. 4 (Autumn 2009): 1060, www.jstor.org/stable/40542174.

[140] Sanjoy Hazarika, "Despite U.S., Yeltsin Backs Rocket Deal With India," *New York Times*, January 31, 1993, https://nyti.ms/298lpC4.

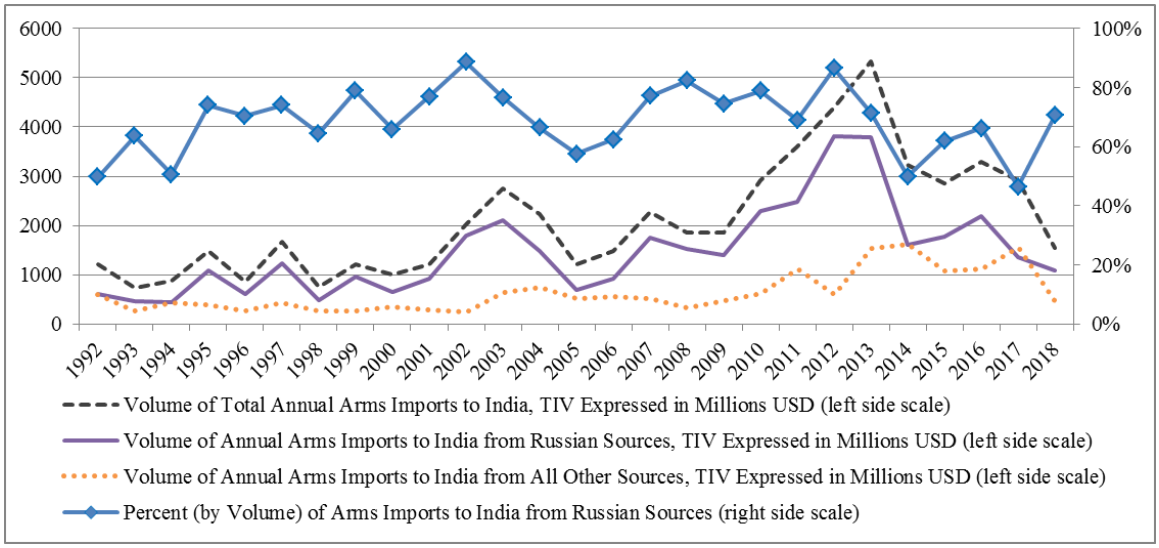
[141] SIPRI, "Importer/Exporter TIV Tables."

[142] SIPRI. NOTE: TIVs.

[143] SIPRI. NOTE: TIVs.

period—gross domestic product (GDP) roughly doubled between 2000 and 2010 after adjusting for inflation—enabled similar budgetary increases for the Ministry of Defense, even though military expenditures as a portion of GDP *declined* slightly during this period.[144]

Figure 7. Russian Arms Exports to India, SIPRI Trend-Indicator Values (TIV) in Millions USD, 1992–2018[145]



India's relationship with the United States was strained during the Clinton years due to the nuclear issue.[146] The George W. Bush administration, however, struck "a more pragmatic and measured" tone regarding Indian nuclear capabilities, criticized elements of Pakistan's conduct during the global war on terror, and began to give serious consideration to counterbalancing Chinese power in Asia as the afterglow of the post-Soviet peace

144 "GDP (Constant 2010 US$) - India," World Bank, accessed December 14, 2019, https://data.worldbank.org/indicator/NY.GDP.MKTP.KD?locations=IN&view=chart; "India - Military Expenditure as a Share of GDP," Knoema, accessed November 15, 2018, https://knoema.com/atlas/India/topics/National-Defense/Military-expenditure-and-trade/Military-expenditure-as-a-share-of-GDP.

145 Adapted from SIPRI, "Importer/Exporter TIV Tables." NOTE: All TIV tables use trend-indicator values expressed in constant 1990 U.S. dollars, a unit that is unique to the SIPRI databases, rather than actual financial cost (either real or adjusted for inflation). See Footnote 10.

146 Ganguly, "The Start of a Beautiful Friendship?" 26.

dividend faded.[147] Consequently, New Delhi and Washington enjoyed a rapprochement early in the 2000s, resulting in gradual resumption of arms sales from the United States to India.[148] The United States soon became a major supplier of military equipment to India.[149] The improved relationship also produced an upswing in bilateral military exercises and deliberate coordination in "such matters of common interest as terrorism, peacekeeping operations, the protection of sea lanes, and piracy."[150] Better standing with the United States, however, did not seriously damage India's relationship with Russia. In 2000, Prime Minister Atal Vajpayee and President Vladimir Putin signed a declaration of "strategic partnership" and promised increased cooperation on "political, economic, trade, scientific, technological, cultural, and other" matters.[151] The two nations have held annual joint summits and conducted multiple official visits since then.

C. ARMS TRADE PATTERNS

Since the late Cold War era, India has been one of the largest single recipients of foreign-built or -designed weapons systems transfers. The country is a well-rounded customer that has imported, leased or licensed platforms intended for every major field of warfare.[152] Within this overall robust arms transfer regimen, the military invested particularly in air and maritime platforms during post-Cold War modernization efforts. This was in direct pursuit of India's broadening strategic interests in these domains, though also a side effect of the digital revolution.

The greatest part of India's overall military expenditure still goes to its land forces as seen in Figure 8; within the land forces, over half of all costs were characterized as

147 Ganguly, 26.

148 Ganguly, 25.

149 SIPRI, "Importer/Exporter TIV Tables."

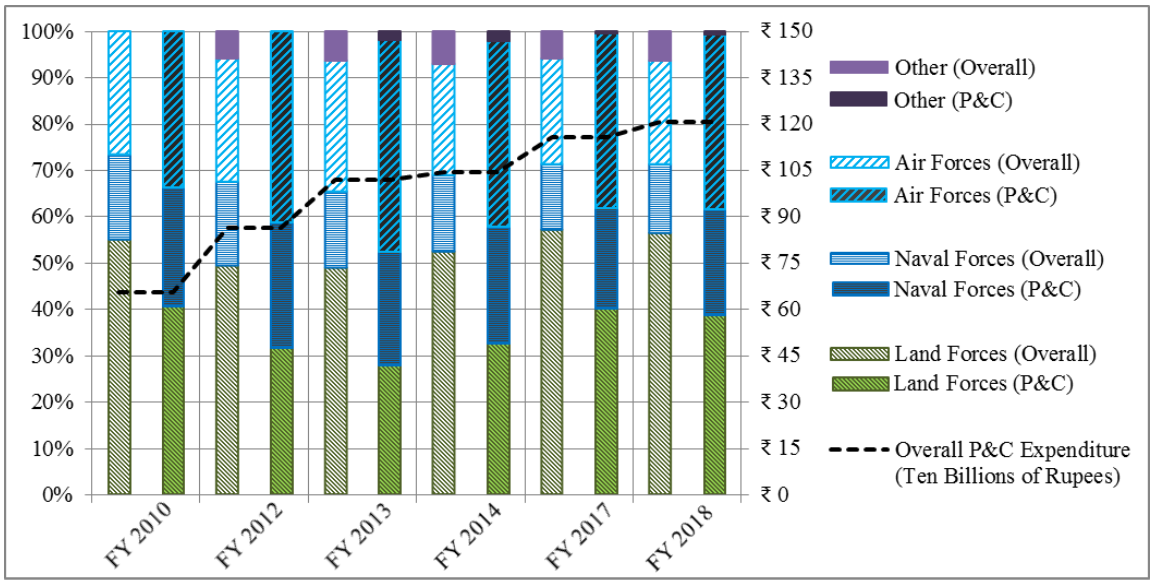
150 Ganguly, "The Start of a Beautiful Friendship?" 25.

151 "Declaration on Strategic Partnership Between the Republic of India and the Russian Federation," Government of India, Ministry of External Affairs, October 3, 2000, https://mea.gov.in/Images/pdf/DeclarationStrategicPartnership.pdf.

152 SIPRI, "Importer/Exporter TIV Tables."

"personnel" expenditures in self-reporting to the UN.[153] Modernization efforts undertaken by the IA cannot ignore this financial reality, which will likely have a major impact on equipment obsolescence in coming decades. Although the Navy and Air Force control much smaller budgets than the Army, they are not burdened with massive standing forces and have invested heavily in buying and building new equipment, with 59%-80% of reported yearly outlays funding procurement and construction.[154]

Figure 8. Indian Military Expenditures and Allocations by Service (Self-report to UN)[155]



This figure illustrates the differences among resource allocation across force types. The first column for each year entry provides a comparison of overall military expenditures by force type. This includes expenditures for personnel, operations and maintenance (O&M), procurement and construction (P&C), R&D, and miscellaneous costs. The second column for the year compares only procurement and construction expenditures. *NOTE: the FY 2010 land forces' P&C expenditure is an estimate, as the 2010 report combined it with operations expenses. I derived the estimate by averaging the ratios of land force P&C to O&M expenditures from other years, then applying the ratio to the combined 2010 figure.*

153 "India," United Nations Report on Military Expenditures, accessed October 19, 2019, http://www.un-arm.org/Milex/CountryProfile.aspx?CountryId=90

154 United Nations Report on Military Expenditures, "India."

155 Adapted from United Nations Report on Military Expenditures, "India." Information is derived from self-reported information to the UN; no information available for 2011, 2015 or 2016.

1. Aircraft

India has invested heavily in updating and expanding its aircraft inventories, both as a component of the overall modernization efforts and as part of New Delhi's specific response to Chinese expansionism, which manifests most clearly in the maritime domain. In particular, the Ministry of Defense has spent billions on acquiring naval aviation platforms centered on developing its general maritime patrol capability (for both the Navy and Coast Guard), enhancing its anti-submarine warfare capacity, and establishing a carrier-based fixed wing force. Such maritime expansion, however, is in addition to modernizing the existing IAF fleet with expensive fourth- and fifth-generation fighter aircraft. Moreover, Indian efforts to fully indigenize military aircraft procurement have met with severe setbacks, as exemplified by the troubled development of the *Tejas* fighter, and are still dependent in many cases on licensed production or expensive imported avionics and sensor suites. The overall numbers of aircraft involved in these efforts and the desire to develop new capabilities or enhance existing ones, combined with production problems, together have increased reliance on foreign suppliers for aircraft acquisition.

Acquisition of aircraft and associated subsystems consistently comprised the plurality of all of India's arms transfers after 1991, and for the last decade an outright majority as tabulated by SIPRI trend-indicator values.[156] Aircraft and associated onboard systems were typically built or ordered in multiples of ten, while compatible weapons such as air-to-air and air-to-ground missiles were typically ordered by the hundreds, contributing to the high overall values.[157] While Russia remains the foremost supplier for air-to-air fighter craft and carrier-based platforms, the United States has achieved preferred status in the anti-submarine warfare realm with the P-8 *Poseidon* (earlier P-3 *Orion*) over legacy German- and Soviet-manufactured maritime patrol craft, and French aerospace firm Dassault continues a boutique relationship with the IAF.[158]

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156 SIPRI, "Importer/Exporter TIV Tables," keeping in mind that the TIV figure includes local licensed production of a foreign design.

157 SIPRI, "Trade Registers."

158 "World Navies > India," Jane's by IHS Markit, July 3, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/FG_2312810-JWNA.

Russia is India's only viable foreign supplier for certain vital military platforms, such as fighter aircraft that are compatible with the Indian Navy's two fixed-wing aircraft carriers, both of which feature a ski-jump ramp rather than powered catapults with a flat deck for launching planes. The indigenously designed *Tejas* combat aircraft—designed to phase-replace the aging Russian-designed MiG-21 *Fishbed* and British-designed *Sea Harrier*, and currently operated by the Indian Air Force alongside a variety of foreign-built aircraft—was plagued by decades of development delays and ultimately deemed too heavy for carrier operations following tests in 2016.[159] This leaves the Russian MiG-29K and MiG-29KUB *Fulcrum* variants as the Indian Navy's best options for maintaining its sea-based fighter capability as of 2018—indeed the IAF and IN were already operating dozens of MiG-29 airframes during the delivery of the first *Tejas* fighter, making further acquisitions a convenient decision for the Ministry of Defense.[160]

2. Tanks, Armored Vehicles and Field Weapons

With over a million members and active border disputes, India's Army is the dominant branch of its military. New Delhi has invested extensively in upgrading land warfare systems over the past three decades, although more of the army's expenditures go to maintaining the human force than equipment (at least since 2010).[161] According to SIPRI data, acquisition of field weapons peaked in the 1990s, but has generally played second fiddle to aircraft acquisition in the twenty-first century.[162] Armored vehicles and artillery comprised about fourteen percent of India's total arms transfers since 1992.[163] Russia remains the principal supplier of these systems to India, and has also tried to corner the Indian market for modernization of Soviet-manufactured legacy systems.

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159 "Navy Rejects 'Overweight' Tejas, Looks for Alternative," *Times of India,* December 3, 2016, https://timesofindia.indiatimes.com/india/Navy-rejects-overweight-Tejas-looks-for-alternative/articleshowprint/55761834.cms.

160 Konstantin Makienko, "MiG-29 on the Market: Recent History and Outlook," *Moscow Defense Brief*, no. 32 (2012), http://www.mdb.cast.ru/mdb/62012/item3/article2/.

161 United Nations Report on Military Expenditures, "India."

162 SIPRI, "Importer/Exporter TIV Tables."

163 SIPRI. NOTE: TIVs.

The various processes by which the Indian Army built its inventory of T-90S and T-90MS *Bhishma* main battle tanks conveniently illustrate multiple facets of the Russo-Indian arms trade relationship, as well as the indigenous production problems stymying the MoD's ambitious force modernization plans. Through the 1980s and 1990s, the second-generation Soviet T-72 MBT served as the IA's primary armor platform, with an inventory of approximately 2,400 vehicles.[164] But the vehicles themselves were aging; moreover, they were obsolescing, as Pakistan fielded the more modern (third-generation Soviet baseline) Ukrainian-built T-80UD MBT beginning in 1997.[165] In 2001, New Delhi concluded a U.S. $600-$700 million agreement with Moscow for over three hundred state-of-the-art T-90S tanks.[166] Over half of the sum was paid up front.[167] The transfer was to consist of both finished units and kits for assembly in India, to be deployed instead of the indigenous *Arjun* tank project—which had languished in various stages of production hell since the 1970s—as the phased replacement for the Army's workhorse tank, the Soviet-built T-72.[168] The European-designed components were beset with technical problems in the Indian climate.[169] Nonetheless, in 2006 the Ministry of Defense tapped the state-owned Heavy Vehicles Factory (HVF) to produce a thousand additional T-90S tanks under license from Russia, as the *Arjun* would "not be procured in the large quantities originally imagined" despite finally entering production.[170] As of 2019, however, New Delhi authorized a U.S. $1.93 billion dollar plan with Rosoboronexport to order over 400 additional advanced T-90MS units, to be constructed mostly in Russia by Uralvagonzavod

164 "South Asia, India Army Equipment in Service," Jane's by IHS Markit, July 3, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/FG_2307122-SAS.

165 "India to Buy Russian T-90S MBTs," Jane's by IHS Markit, February 16, 2001, https://janes.ihs.com/Janes/Display/jdw00635-jdw-2001.

166 Jane's by IHS Markit.

167 Jane's by IHS Markit.

168 Jane's by IHS Markit.

169 "India's T-90S Main Battle Tank Feels the Heat," Jane's by IHS Markit, June 8, 2006, https://janes.ihs.com/Janes/Display/jdw23853-jdw-2006; "Indian Army Arjun MBTs Begin Production," Jane's by IHS Markit, July 13, 2006, https://janes.ihs.com/Janes/Display/jdw70576-jdw-2006.

170 "Russia Signs New Contract with India for T-90S MBTs," Jane's by IHS Markit, October 13, 2006, https://janes.ihs.com/Janes/Display/jdw30747-jdw-2006.

to compensate for delayed production at home.[171] Army statements surrounding the deal cited dissatisfaction with the pace of HVF output:

> acquisition of the T-90MS MBTs has become necessary following the 'slow pace' at which HVF has been licence-building the 1,000 T-90S MBTs… [that] it had contracted in 2006–07 to complete by 2020. So far, the HVF has licence-built merely 350–400 units.[172]

Despite the growing inventory of modern T-90 and *Arjun* tanks, the T-72 remains the Army's workhorse, with about 1,400 MBTs and 500 support variant vehicles in service as of 2019 (though many are likely non-operational).[173] In the early 2000s, acquisition of the T-90S competed with the need to modernize the obsolescing T-72. Rosoboronexport offered both to supply the new tanks and upgrade the old ones, but "lost a lever" upon successful completion of its initial T-90S delivery in 2003.[174] After diverting funds for several years toward accelerated acquisition of the new tank, India ultimately turned to a Polish contractor to provide electronics and sensor upgrades to a portion of the T-72 inventory, at a cost of 2002 U.S. $73 million and with no local production authorized.[175] The Army later entertained plans to procure 1,000 upgraded engines from a Polish supplier as well, before opting to earmark approximately U.S. $313 million to manufacture the engines in India.[176]

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171 Franz-Stefan Gady, "India Approves Procurement of 464 T-90MS Main Battle Tanks," *The Diplomat*, April 18, 2019, https://thediplomat.com/2019/04/india-approves-procurement-of-464-t-90ms-main-battle-tanks/.

172 Rahul Beddy, "India's Cabinet Committee on Security Approves Procurement of 464 T-90MS Tanks," Jane's by IHS Markit, April 8, 2019, https://www.janes.com/article/87742/india-s-cabinet-committee-on-security-approves-procurement-of-464-t-90ms-tanks.

173 Jane's by IHS Markit, "South Asia, India Army Equipment in Service."

174 "Russian T-90S Tank Contract with India Robs Moscow of 'Lever' on T- 72 Update," BBC, August 7, 2002, ProQuest.

175 "Poland to Upgrade India's T-72 Tanks for $73 mn," *Times of India*, March 22, 2002, https://timesofindia.indiatimes.com/Poland-to-upgrade-Indias-T-72-tanks-for-73-mn/articleshow/4540559.cms.

176 Franz-Stefan Gady, "India to Procure 1,000 Engines for T-72 Main Battle Tank Force," *The Diplomat*, October 3, 2018, https://thediplomat.com/2018/10/india-to-procure-1000-engines-for-t-72-main-battle-tank-force/.

3. Maritime Platforms

Although airborne systems comprised the majority of Indian arms imports since 1992, naval systems also consumed a significant portion of the defense acquisitions budget. Ship acquisition (sans additional shipborne sensors, engines and weapons) comprised about twelve percent of total arms transfers to India since 1992, according to SIPRI.[177] Acquisition of entire naval combatants differs from aircraft and terrestrial systems in several fundamental aspects. Platforms are relatively large, few, and expensive to maintain; as such, they are typically built to perform a variety of missions and to accommodate major upgrades as they age. The extended construction process of a ship or submarine provides multiple opportunities for customization and integration of foreign designs with domestic facilities—whether that entails bow-to-stern licensed production, technical assistance from foreign engineers, integration of foreign-built weapons and sensors onto a locally built hull, or simply the delivery of a complete platform. India has explored many of these options during recent decades in its acquisition of Russian-built and -designed naval combatants.

The Indian Navy's ten *Kilo*-class attack submarines were built in and delivered from St. Petersburg shipyards, some as new constructions and others as refurbished units. Similarly, the IN's *Kiev*-class aircraft carrier was modernized in Severodvinsk after service in the Russian Navy, and subsequently accepted in 2013 as the INS *Vikramaditya*.[178] The carrier probably could not have been modernized at the time in Indian Navy facilities, which lacked a suitable drydock until 2019.[179]

The nominally straightforward process of commissioning whole platforms from Russia was often motivated by problems with India's domestic production of similar units, but has itself been beset by delays and cost overruns in Russian shipyards. Delivery of all

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[177] SIPRI, "Importer/Exporter TIV Tables."

[178] Sitanshu Kar, "INS Vikramaditya Adds A New Dimension to Navy's Operational Capabilities: Antony INS Vikramaditya Commissioned in Indian Navy," Government of India, Ministry of Defense, Press Information Bureau, November 16, 2013, http://pib.nic.in/newsite/PrintRelease.aspx?relid=100633.

[179] Hindustan Construction Company, "Defense Minister Rajnath Singh Inaugurates Indian Navy's First Aircraft-Carrier Dry Dock," September 28, 2019, https://hccindia.com/uploads/pressreleases/0_08884400_1569839857_0_10389700_1569820713_Press_Release_-_Naval_Dry_Dock_Inauguration.pdf.

six original *Talwar*-class frigates from Russia, for example, also occurred behind schedule.[180] Also, the cost of *Vikramaditya*'s modernization ballooned to three times higher and finished five years later than initially contracted.[181] Second-order effects of this delay included refitting the IN's only other carrier, the half-century-old British-built INS *Viraat*, to continue service several years past its originally planned retirement. Once acquired, however, the technology transfer associated with acquisition of the new platform provided the Indian Navy with an excellent example for building and operating its own aircraft carrier – INS *Vikrant*, which is expected to begin sea trials in 2020.[182]

Planned upgrades to Russian-built platforms were also subject to problems, but leveraging foreign shipyards remains the most viable way for the Indian Navy to complete major naval projects while minimizing delays. A 2001 contract to upgrade the IN's *Kilo*-class submarine fleet to support advanced missiles from the *Klub* family, for example, turned sour in 2008 when the first such submarine to be retrofitted failed its missile test firing battery.[183] Navy leadership tapped Russia's Zvezdochka Shipyard again in 2016 to handle mid-life extension maintenance for one of the IN's *Kilo*-class submarine fleet, with the remaining three ships in the group contracted to Indian firm Larsen and Toubro, at a total cost of some U.S. $747 million.[184] Russian engineering consultants were involved in the certification of L&T's privately owned shipyard near Chennai as the facility most "technically capable" of supporting the refit processes and timelines required.[185] The *Kilo*

[180] The class was initially developed as a follow-on of the *Krivak III*-class frigate and is comparable to Russia's *Grigorovich*-class frigate.

[181] SIPRI, "Trade Registers."

[182] Franz-Stefan Gady, "India's First Indigenous Aircraft Carrier to Conduct Basin Trials in 2020," *The Diplomat*, July 10, 2019, https://thediplomat.com/2019/07/indias-first-indigenous-aircraft-carrier-to-conduct-basin-trials-in-2020/.

[183] Sandeep Unnithan, "Dud Missile," *India Today*, Jan 21, 2008, https://www.indiatoday.in/magazine/defense/story/20080121-dud-missile-735046-2008-01-10.

[184] Manu Pubby, "Upgrading Kilo Class Submarines: L&T Set to Partner Russia for Rs 5,000-Crore Defense Deal," *Economic Times*, July 14, 2018, https://economictimes.indiatimes.com/news/defense/upgrading-kilo-class-submarines-lt-set-to-partner-russia-for-rs-5000-crore-defense-deal/articleshow/50491411.cms.

[185] Pubby.

mid-life extension process itself had become necessary largely because of a six-year delay around production of *Scorpène*-class attack submarines in Mumbai.[186]

Indian shipyards have undertaken licensed production of Russian-designed naval units, most recently the follow-on *Talwar*-class guided missile frigate (Project 11356), for use by the Navy.[187] However, the two ships to be built in India "are expected to cost 30–50% more than the direct Russian import [of two additional ships] due to the cost of building infrastructure and transfer of technology." [188] Prior to *Talwar*, three *Shivalik*-class guided missile frigates (Project 17) were produced in India as hybrids of indigenous labor and imported Russian sensors and weapons.[189] Russian and Indian engineers collaborated on development of the *BrahMos* anti-ship cruise missile—billed as a joint project, although the design drew heavily from Russia's SS-N-26 *Strobile* missile.[190]

India also relied on Russian suppliers for critical components of the Navy's nominally indigenous shipbuilding projects. Obtaining warship-grade steel was a "primary hurdle" in the construction of both the indigenous *Kolkata*-class destroyer (Project 15A) and the *Shivalik* frigates. Lack of availability from Russian suppliers contributed heavily to cost overruns of over 200 percent for the project, prompting Delhi to urge Indian metals manufacturers to enter the defense sector.[191]

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186 Rajeswari Pillai Rajagopalan, "The Trouble with India's Slow Naval Buildup," Observer Research Foundation, October 5, 2019, https://www.orfonline.org/research/trouble-india-slow-naval-buildup-56188.

187 Manu Pubby, "India Clears Way for $2.2-Billion Frigates Deal with Russia," *Economic Times*, September 17, 2018, https://economictimes.indiatimes.com/news/defense/india-clears-way-for-2-2-billion-frigates-deal-with-russia/printarticle/65835654.cms.

188 Pubby.

189 Mikhail Barabanov, "Russian Ship-Based Air Defense Missile Systems," *Moscow Defense Brief*, special issue (2019), http://www.mdb.cast.ru/mdb/1-2019/item2/article1/; Jane's by IHS Markit, "World Navies > India."

190 Sergey Denisentsev, "The BrahMos Project: History and Outlook," *Moscow Defense Brief*, no. 47 (2015), www.mdb.cast.ru/mdb/32015/item2/article1; "BrahMos (PJ-10)," Jane's by IHS Markit, November 6, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/JNWSA010-JNW_. The joint element is even included in the name.

191 Vivek Raghuvanshi, "Steel Delay Busts Budget for Indian Destroyers," Sightline Media Group Defense News, August 29, 2011, NewsBank; Sohrab Darabshaw, "India's Steel Companies are Entering the Defense Business Supply Chain," MetalMiner, last modified March 16, 2017, https://agmetalminer.com/2017/03/16/indias-steel-companies-are-entering-the-defense-business-supply-chain/.

4. Air Defense and Missile Systems

In a 2018 deal costing some U.S. $5.4 billion, Moscow agreed to furnish the Indian Air Force with five S-400 *Triumf* (NATO reporting name SA-21 *Growler*) air defense systems, for delivery between 2020–2025.[192] The sophisticated S-400 is a popular high-end system on the weapons export circuit as well as in Russia, where it has been in use since 2007.[193] The fact that the Russian-built system would also be far less costly than procuring comparable United States-built systems like THAAD—reportedly offered at a cost of U.S. $3 billion *per unit* in response to the S-400 agreement—was probably also a point in favor of the S-400.[194]

The success of the *BrahMos* naval cruise missile program has spurred further cooperation between India's DRDO and Russia's NPOM, which have developed a ship-launched LACM variant of the *BrahMos* as of May 2019, as well as lighter air-launched variants designed to be carried by the Su-30MKI *Flanker* fighter aircraft.[195] Plans exist to continue collaboration on more advanced versions of these systems.[196] The joint project is also an example of successful Indian indigenization of its supply chain, with "more than 70% of the missile components … [and] 100% of ground support equipment for the weapon complex" being manufactured in India in 2019, to include metallic parts subjected to high stress levels.[197] The *BrahMos*'s development from a Russian baseline into evolved, specialized forms that are increasingly "made in India"—and that can be marketed as

192 "India, Russia conclude negotiations for S-400 Triumf Deal," *Times of India*, May 27, 2018, https://timesofindia.indiatimes.com/india/india-russia-conclude-negotiations-for-s-400-triumf-deal/articleshowprint/64339903.cms.

193 "S-400," Jane's by IHS Markit, December 5, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/jlad0593-jaad.

194 India.com News Desk, ed. Kanimozhi Sudhakar, "US Offers THAAD Air Defense System to India as Alternative to Russia's S-400: Report," India.com, May 12, 2019, https://www.india.com/news/world/us-offers-thaad-air-defense-system-to-india-as-alternative-to-russias-s-400-report-3656575/.

195 Andrey Frolov, "BRAHMOS Supersonic Cruise Missile Program Achieves Major Milestones in 2018–2019," *Moscow Defense Brief*, special issue (2019), www.mdb.cast.ru/mdb/1-2019/item2/article3/.

196 Frolov.

197 Frolov.

Indian exports—marks a high point in the Russo-Indian military-technical cooperative relationship.

D. FORMAL AND INFORMAL ARRANGEMENTS

Indo-Russian arms transfer activity spans a wide spectrum of interaction types. Essentially any category of deal that supplier and recipient states might undertake, Delhi and Moscow have undertaken.

1. Economic/Commercial Accommodations Made by Russia

a. Payment Changes (Cash, Commodities, etc.)

Russia has been willing to grant considerable payment accommodations for its largest single customer. In the 1990s—shortly after the Indian financial crisis—Moscow and Delhi arranged for a direct ruble-rupee conversion applying to defense procurement deals.[198] The move benefited both parties, as the Indian government was able to bypass the extra expenses of conversion through world currency, while Russian defense companies secured another major source of income. Since the invasion of Crimea, sanctions targeting Russia have also affected arms transfers. The latest *Talwar* deal, inked in 2018, again allowed payment by direct conversion between rupees and rubles – this time to bypass American financial sanctions against Moscow.[199]

b. Offsets

Industrial offsets are a common demand from countries seeking to establish their own arms manufacturing capability, and India is no exception.[200] Licensed production and formal technology transfer were major offset categories in Russian arms transfers to India. The Ministry of Defense has imposed mandatory offsets since 2004 for all arms transfer

198 Hazarika, "Despite U.S., Yeltsin Backs Rocket Deal with India."

199 Pubby, "India Clears Way for $2.2-Billion Frigates Deal with Russia."

200 Hirak Choudhuri, "Arms Sales and Regional Hegemony," *Korea Herald*, October 2, 2002, LexisNexis.

deals over a set value, although that value has increased over time.[201] In 2011, the Indian Ministry of Defense threatened to increase offset requirements in future arms transfer agreements with Russia, the immediate cause being an attempt by Rosoboronexport to credit the granting of technical designs for the MiG-29 toward the offset requirement baked into a $960 million dollar contract to upgrade the airframe, currently in use by the IAF and IN.[202]

c. Maintenance and Personnel Training

Russia also frequently agreed to provide maintenance and personnel training as part of major arms transfers to India. The 2011 MiG-29 upgrade contract, for example, included "detailed plans for setting up simulator-based training centers, service depots, and maintenance centers for aircraft and radar systems."[203] Russia also provided training for the Indian Navy crews operating the imported *Akula* class nuclear-powered submarine.[204] In some cases, the training and maintenance elements of an arms transfer agreement are most noticeable when they go awry—such as when replacement parts are delayed in Russia, incentivizing alternate procurement methods. A memorandum of understanding signed in August 2017 between Indian military transport firm Ashok Leyland Defense Systems and Rosoboronexport permitted Indian production and "life cycle support" of Russian designs for armored vehicles and tanks.[205] Such memoranda have enabled greater

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[201] Rahul Bedi, "India Accords Priority to Indigenous Defense Production, Raises Threshold for Mandatory Offsets," Jane's by IHS Markit, January 12, 2016, https://janes-ihs-com.libproxy.nps.edu/DefenseWeekly/Display/jdw60732-jdw-2016; Rahul Bedi, "India Changes Its Offset Policy," Jane's by IHS Markit, January 7, 2011, https://janes-ihs-com.libproxy.nps.edu/DefenseWeekly/Display/jdw45039-jdw-2011.

[202] Vivek Raghuvanshi, "India, Russia Bicker Over Offset for MiG-29s," Sightline Media Group Defense News, August 29, 2011, NewsBank.

[203] Raghuvanshi.

[204] "India Set to Join the SSN Club," Jane's by IHS Markit, August 20, 2010, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/jdw43935-jdw-2010. It can also be assumed that the USSR and Russia provided Indian crew training for the *Kilo* class submarines delivered in the 1980s and 1990s, since India was the first export *Kilo* purchaser.

[205] "Ashok Leyland Arm, ELCOM Ink Defense Pact with Russian Firm," *Hindu Business Line*, September 6, 2017, https://www.thehindubusinessline.com/companies/ashok-leyland-arm-elcom-ink-defense-pact-with-russian-firm/article9848412.ece. Ashok Leyland is a major military transport manufacturer for the Indian Army.

autonomy for India for the initial arms production process and, perhaps even more importantly, follow-on maintenance and sustainment cycles.

2. Technology Accommodations Made by Russia

a. Indigenous Production

The Russian government was typically willing to entertain a range of indigenous production options when negotiating transfer deals with India. The MoD has funded multiple licensed production lines and import substitution efforts since 1991. Prime Minister Modi's "make in India" initiative, officially launched in 2014, is a cluster of government programs designed to strengthen the Indian economy through foreign direct investment and industrial diversification.[206] The initiative manifested in the MoD's 2016 Defense Procurement Procedure as several reforms designed to incentivize local production.[207] The Make in India mentality has had major ramifications for the arms trade business in India, since foreign partners who wish to secure major transfer deals with the world's largest arms importer must take into account Delhi's insistence on indigenization of multiple components. Russia is an accommodating partner in these efforts, consenting to:

1. Construction of entire units using Indian materials in Indian facilities via licensed production, e.g., the advanced *Talwar*-class frigate.[208] This is probably a mutually optimal situation for *both* states, since the administration in Delhi is willing to pay a premium for the necessary technology transfer and opportunities to build India's industrial base. Rosoboronexport, on the other hand, likely prizes opportunities for profit with relatively low space, labor and time commitments.

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206 "About Us," Government of India, Ministry of Commerce and Industry, Department for Promotion of Industry and Internal Trade, accessed November 1, 2019, http://www.makeinindia.com/about.

207 Bedi, "India Accords Priority to Indigenous Defense Production, Raises Threshold for Mandatory Offsets."

208 Pubby, "India Clears Way for $2.2-Billion Frigates Deal with Russia."

2. Construction or assembly in Indian facilities using a mix of Russian and Indian manufactured components, e.g., the *Shivalik*-class frigates.

3. Delivery of kits for assembly in India, e.g., T-72 and some T-90S tanks.[209]

4. Delivery of entire units, e.g. *Kilo*-class attack submarines, with follow-on modifications performed in India with Russian advisory assistance.[210]

b. Lease and Upgrade Contracts

The IN's *Akula*-class attack submarine was leased from Russia in 2012 and will likely be renewed at the end of the ten-year lease, with a second hull requested for delivery by 2025.[211] Prior to the transfer of the first *Akula*, a *Charlie*-class submarine on lease from the Soviet Union filled a similar role from 1987–1991.[212] Lease of these nuclear-powered platforms is doubtlessly educational for the Navy, since the rest of the fleet (other than the *Arihant* SSBN, which began development in the 1990s and was not commissioned until 2016) is conventionally powered.

c. Joint Weapons Development

Russia is the favored but not sole partner in India's joint weapons development efforts. The *BrahMos* project remains one of the most successful examples of multilateral collaboration between India and Russia. However, the failed multirole transport aircraft (MTA) and fifth generation fighter aircraft (FGFA) projects undertaken by Hindustan Aeronautics Limited and United Aircraft Corporation show that the Russo-Indian joint development relationship was not always fruitful. Citing intractable disagreements over

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209 Jane's by IHS Markit, "India to Buy Russian T-90S MBTs."

210 Rahul Bedi, "L&T Shortlisted for 'Kilo' Upgrade Work," Jane's by IHS Markit, January 13, 2016, https://janes-ihs-com.libproxy.nps.edu/DefenseWeekly/Display/jdw60743-jdw-2016.

211 "India Signs Pact with Russia on Chakra-3 Attack Submarine," *Economic Times,* March 8, 2019, https://economictimes.indiatimes.com/news/defense/india-signs-pact-with-russia-on-chakra-3-attack-submarine/articleshow/68307218.cms.

212 "Akula (Schuka-B Class)," Jane's by IHS Markit, May 23, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/jfs_b064-jfs.

engine design, Russian officials announced the termination of the MTA's status as a joint project in 2016.[213] For the senior development partner Russia, the airframe is expected to debut as the Il-276 in the 2020s, but it remains unclear how junior partner India will recoup the hundreds of millions of dollars invested or fill the gaps in its aging transport fleet.[214] In 2018, Indian officials withdrew from the slow-moving FGFA program, noting that continued development of the aircraft (based on the state-of-the-art Su-57 *Felon*) "would commit a large proportion of the IAF's finances to a foreign developmental programme at a juncture when it desperately needed to indigenise and modernise."[215]

In addition to cooperation with Russian partners, India has undertaken a joint SAM venture with Israel, although the scale of the program is relatively small.[216] The MoD also aims to produce advanced diesel submarines (Project 75I) through collaboration with an as-yet unidentified partner; Russian, French, German and Swedish vendors have been feted, but the project will likely suffer from delays similar to the IN's other submarine procurement and modernization efforts if it is finalized.[217]

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213 Gareth Jennings, "Russia 'Freezes' India Out of MTA Project, to Proceed Alone as Il-214," Jane's by IHS Markit, January 13, 2016, https://janes-ihs-com.libproxy.nps.edu/DefenseWeekly/Display/jdw60739-jdw-2016.

214 "Ilyushin Il-214 and Il-276," Jane's by IHS Markit, July 10, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/jawa5372-jawa.

215 Rahul Bedi and Reuben F. Johnson, "India Withdraws from FGFA project, Leaving Russia to Go It Alone," Jane's by IHS Markit, April 20, 2018, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/FG_906997-JDW.

216 Vivek Raghuvanshi, "Joint Israeli, Indian Venture to Make Missiles Kits for Barak-8 Weapon," July 11, 2019, https://www.defensenews.com/global/asia-pacific/2019/07/11/joint-israeli-indian-venture-to-make-missiles-kits-for-barak-8-weapon/.

217 "Introduction," Jane's by IHS Markit, February 6, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/jfs_1376-jfs. Contenders are Russian (ROE Rubin Design Bureau), French (Naval Group DCNS), German (ThyssenKrupp Marine) and Swedish (Saab Kockums); all but the Swedish have built some of the existing subs in the Indian Navy.

3. Overtly Political/Strategic Accommodations Made by Russia

a. Treaties and Declarations

India and the Soviet Union implemented a military-technical cooperation agreement in 1962 and a treaty of friendship in 1971. The Russian successor state and India still honor both, and have renewed the declarations several times.[218]

b. Bilateral Military Cooperation

The two countries regularly participate in a joint naval exercise known as INDRA NAVY, taking place near either Indian or Russian waters and conducted to "strengthen mutual confidence and inter-operability" while reinforcing the standing "bond of friendship between the countries."[219] While they do not share any land or sea borders and thus have few other opportunities for direct cooperation, New Delhi and Moscow do have common interest in Afghanistan's security prospects, in central Asian security writ large due to its implications for energy futures, and overlapping security aims with respect to containing China.

E. VOLUME AND TRENDS

Taking advantage of New Delhi's non-aligned status, the Indian defense sector keeps a diverse portfolio of international arms transfer partners. As a percentage of value of all arms imports to India, Russian sources have fluctuated and the clearest trend seems to be that Russian imports comprised from fifty to eighty percent of the overall value of arms imports in a given year.[220] The volume of importation has increased greatly since 1990, however, expanding from U.S. $1.1 billion annually during the 1992–1999 period to an average of U.S. $3.8 billion in 2010–2015—comparable to arms transfer rates in the late

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[218] "Bilateral/Multilateral Documents," Government of India, Ministry of External Affairs, last modified December 13, 2019, https://mea.gov.in/bilateral-documents.htm?53/Bilateral/Multilateral_Documents.

[219] "Russian Federation Navy Ships Arrive Visakhapatnam to Participate in INDRA NAVY 2018," Indian Navy, last modified December 11, 2018, https://www.indiannavy.nic.in/content/russian-federation-navy-ships-arrive-visakhapatnam-participate-indra-navy-2018-0.

[220] SIPRI, "Importer/Exporter TIV Tables."

1980s and reflecting the state's overall efforts to modernize its armed forces as India climbs the rungs of the world power ladder.[221]

The government would like to see the Indian DIS become more self-reliant. Such is one of the goals of movements like Prime Minister Modi's "Make in India" initiative.[222] However, the acquisition requirements of the Ministry of Defense have expanded at a faster rate than fully indigenous production lines can match. Domestic production and roll-out of new platforms frequently sputtered. The HAL *Tejas,* for example, is India's first from-the-ground-up native fighter plane, designed by Hindustan Aeronautics. The first of multiple planned variants has reached IOC in the IAF, but there was also to be a carrier variant compatible with the *Vikrant* class carrier.[223] However, the airframe is too heavy to be compatible with *Vikrant*-class or *Vikramaditya* carrier operations, and was rejected by the Navy, necessitating acquisition of foreign airframe to replace the aging Sea Harrier fleet of the *Vikrant* (I) days.[224] In a similar vein, India's only indigenously built SSBN, *Arihant*, was out of commission for much of 2016 due to equipment problems caused by negligent water entry. Therefore, deltas are made up with outright imports and the intermediate step of licensed production.

India's dependence on foreign arms transfers creates a degree of path dependency. Existing equipment is more compatible with follow-on versions from the same producers, and less crew training is required to make the transition. Therefore, India has become a repeat customer for certain types of equipment from particular suppliers. While the *Tejas* languishes in development purgatory, the MiG-29 is the only airframe suitable for operations with INS *Vikramaditya*. Konstantin Makienko observes that "the MiG29K carrier-based version of the fighter has no competition in its niche on the world market. Currently this is the only horizontal takeoff fighter that can be deployed on aircraft carriers

221 SIPRI. NOTE: TIVs.

222 "Indian Navy Participates in Make in India Week," Indian Navy, last modified July 12, 2018, https://www.indiannavy.nic.in/content/indian-navy-participates-make-india-week.

223 Franz-Stefan Gady, "Naval Version of India's Light Combat Aircraft Successfully Completes Flight Tests," *The Diplomat,* May 17, 2016, http://thediplomat.com/2016/05/naval-version-of-indias-light-combat-aircraft-successfully-completes-flight-tests.

224 *Times of India*, "Navy Rejects 'Overweight' Tejas, Looks for Alternative."

without a catapult."[225] The phenomenon is not exclusive to Russian built systems; India's procurement of the U.S.-built ASW aircraft P-3C *Orion* has been followed by the P-8I *Poseidon*.

A subsidiary problem of path dependency arises when suppliers do not deliver as expected: any upstream problems are magnified for customer states waiting to both take initial delivery, and then secure the necessary follow-on technical support. This has led India, stung by cost overruns and contract fulfillment delays from Russian sources, to canvass former Soviet states and even third parties for compatible spare parts to some of its Russian-built and -licensed systems.[226]

F. OUTLOOK

The military-industrial component of India and Russia's relationship has strengthened political and economic ties, and it is a major pillar of the overall strategic partnership. For Russia, India is *the* crucial arms market, accounting for most of the growth in exports between 2017 and 2018, and some thirty percent of total sales from year to year.[227] Yet Russian dominance in the Indian arms trade will not last forever. India is slowly building its own arms production capabilities—even if claims like the Indian Navy's that it has "transformed from a buyer's Navy to builders [sic] Navy" are somewhat misleading.[228] And New Delhi has diversified its arms supplier roster since the end of the Cold War: Israel, France, the United Kingdom and the United States are now significant players.[229] Japan is also on the horizon.[230] Moreover, Russian defense manufacturing firms have been fragile in the past, suffering from internal mismanagement, vulnerable to

[225] Makienko, "MiG-29 on the Market: Recent History and Outlook."

[226] Raghuvanshi, "India, Russia Bicker Over Offset for MiG-29s."

[227] Andrey Frolov, "Russian Arms Exports in 2018," *Moscow Defense Brief*, special issue (2019), www.mdb.cast.ru/mdb/1-2019/item1/article1/; SIPRI, "Importer/Exporter TIV Tables."

[228] Indian Navy, "Indian Navy Participates in Make in India Week."

[229] SIPRI, "Importer/Exporter TIV Tables."

[230] Rajeswari Pillai Rajagopalan, "What's Next for India-Japan Defense Relations?" *The Diplomat*, September 16, 2019, https://thediplomat.com/2019/09/whats-next-for-india-japan-defense-relations/.

boom-bust cycles depending on foreign sales, and falling behind on platform deliveries.[231] If Indian visions of indigenizing coalesce and the military becomes less reliant on Russian arms transfers, Rosoboronexport will need to find new sources of income or risk rising instability in the military-industrial sector.

For India, Russia provided an accessible, affordable and familiar source of conventional armaments prior to the rapid growth of the Indian economy, which may have had positive opportunity benefit effects (i.e., provided a sense of security to government in New Delhi, permitting greater allocation of resources to other sectors). As Indian research and development capabilities expanded into the twenty-first century, New Delhi's pre-existing relationship with Moscow provided a convenient avenue for collaboration.[232] While the military-technical relationship between India and Russia has not translated so far into strong general bilateral trade, it is an important component of the Indo-Russian relationship *per se.* The drum-beaten strategic partnership is confined primarily to sectors controlled by the government and does not spill over into private arenas:

> Most of the areas of Russian-Indian cooperation—including military-technical cooperation and energy—are dominated by government agencies and state-owned companies.… In areas where the government's presence is less obvious or totally absent, examples of cooperation are few and far between.[233]

Overall trade with Russia accounted for less than two percent of Indian trade in recent years, although Moscow supplied the majority of arms imports.[234] As with Sino-Russian trade, the small overall volumes are likely an effect of Russia's commodities-heavy export economy rather than an indicator of the political relationship between New Delhi and Moscow. In private commercial and cultural sectors, India prizes bilateral agreements and direct private sector cooperation with typically Western firms or institutions.[235]

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[231] Makienko, "MiG-29 on the Market: Recent History and Outlook."

[232] Malone, *Does the Elephant Dance?* 237.

[233] Topychkanov, "Russian Policy on India and South Asia."

[234] Malone, *Does the Elephant Dance?* 236; Topychkanov, "Russian Policy on India and South Asia."

[235] Malone, *Does the Elephant Dance?* 232–37.

Politically and economically, the diversified arms trade market of today gives the Kremlin less leverage than it would have if India were still as dependent on Russian-built systems as it was on the USSR in the Cold War era. Conversely, India is now in a better position to negotiate arms transfers on its own terms and turn down Russia's (or any other country's) bids if desired.[236] In fact the MoD has modified its acquisitions policies in recent years to encourage growth *away* from foreign suppliers, even when doing so is more expensive.[237] If Moscow were to seek a means of pressuring the Modi administration, leveraging India's energy dependence on Russia would be more potent. India is a recent member of the Shanghai Cooperation Organization (SCO), an energy-oriented group "dominated by Russia and China…[that] Russia sees…as a counterweight to Western alliances."[238]

Russia and India do not share any borders, have taken neutral stances with respect to each other's territorial disputes, and India maintains a no-first-use nuclear policy. Neither country directly threatens the other. Therefore, it is unlikely that New Delhi and Moscow's strategic goals will conflict over the next decade. Strategically, India is also balancing Chinese power in the area; under Walt's threat balancing framework, this makes the regional political situation more stable, not less.[239] If India can walk the line between good relations with Russia, good relations with the U.S., *and* not-too-adversarial relations with China, then the Indo-Pacific balance of power will likely remain fairly stable.

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[236] Case in point: Scorpène-class submarines.

[237] Bedi, "India Accords Priority to Indigenous Defense Production, Raises Threshold for Mandatory Offsets."

[238] Lidia Kelly, Denis Pinchuk and Darya Korsunskaya, "India, Pakistan to Join China, Russia in Security Group," Reuters, July 10, 2015, https://www.reuters.com/article/us-china-russia-idUSKCN0PK20720150711.

[239] Walt, *Origins of Alliances*, 263.

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V. VIETNAM CASE STUDY

A. CHAPTER SUMMARY

The Russian export market in Vietnam is growing as Vietnam modernizes its military in the twenty-first century. Hanoi has drastically increased the volume of its arms procurement—transfers increased from an annual average value of $114 million in 2000–2005 to $660 million in 2010–2015.[240] Moscow has "re-emerged as a privileged supporter," dominating the Vietnamese arms market; Russian-made or -designed systems comprised 93 percent of all Vietnamese arms imports in 2015, although Hanoi is diversifying its defense sector with smaller recent contracts from Western suppliers.[241]

The upswing in Vietnamese defense spending is mostly attributable to the ascendancy of China in southeastern Asia. Like India, Vietnam has specific border disputes with China—although Vietnam's are maritime rather than terrestrial in nature, with overlapping claims to areas of the South China Sea. The South China Sea is of great economic interest to the surrounding states, and as such Vietnam is greatly interested in preserving its extensive claims in the area.[242] There is also a legacy of bad blood between Vietnam and China regarding changes in control of the Paracel and Spratly island groups.[243] Accordingly, Vietnam's most notable military expenditures have revolved around modernizing its navy and coast guard. Unlike China and India, however, Vietnam lacks the population, placement and economy to become a major power. The power imbalance motivates Hanoi to counter Beijing's influence by seeking closer ties with

240 SIPRI, "Importer/Exporter TIV Tables."

241 Jonathan Holslag, *Trapped Giant: China's Military Rise* (Abingdon, UK: Routledge for the International Institute for Strategic Studies, 2010), 105; SIPRI, "Importer/Exporter TIV Tables."

242 Leszek Buszynski and Iskandar Sazlan, "Maritime Claims and Energy Cooperation in the South China Sea," *Contemporary Southeast Asia* 29, No. 1 (2007): 157–60, https://doi.org/10.1355/cs29-1g.

243 Pavel K. Baev and Stein Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" *International Area Studies Review* 18, issue no. 3 (September 2015): 314–15, https://doi.org/10.1177/2233865915596709.

regional and world powers whose interests do not directly threaten Vietnam's territorial integrity.[244] It is therefore a plum investment opportunity for multiple world powers.

Jonathan Holslag notes that, in addition to contracting for "six *Kilo*-class submarines, 24 advanced Su-30MK2 maritime bombers and up to four *Gepard* frigates," Moscow has also agreed to "build a new naval base, maintenance facilities and a telecommunications centre, and to provide training for Vietnamese navy officers."[245] However, Moscow's growing economic dependence on Beijing's goodwill—a shift which Russian arms transfers to China indirectly contributed to—has alarmed officials in Hanoi.[246] Thus, Vietnam has also increased dialogue and joint exercises with India, to include technical training, intelligence sharing, counterterrorism and jungle operations training.[247] India stands a good chance of becoming the favored Asian partner in future Vietnamese defense strategy, given that the two nations share concerns over Chinese activity in the Indo-Pacific and that that befriending Vietnam will give India a convenient destination market for its own arms export ambitions. Hanoi even resumed military relations with the United States in 2005, a move met with "a lot of internal criticism."[248] The administration has also made friendly overtures to Japan and South Korea.[249] Although the newer relationships with the United States and Japan have yet to produce results in the arms transfer arena, there have been discussions among all three states to do so.[250]

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244 Baev and Tønnesson, 313, 317.

245 Holslag, *Trapped Giant*, 105.

246 Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 317.

247 Holslag, *Trapped Giant*, 105; Dipanjan Roy Chaudhury, "Bolstering Act East Policy: India to Train Vietnamese Intelligence Forces," *Economic Times*, April 6, 2015, http://articles.economictimes.indiatimes.com/2015-04-06/news/60866058_1_indian-ocean-region-south-china-sea-pm-dung.

248 Holslag, *Trapped Giant*, 105.

249 Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 317–18.

250 SIPRI, "Trade Registers;" Defense Industry Daily, "Vietnam's Restocking: Subs, Ships, Sukhois, and Now Perhaps F-16s and P-3s?" last modified May 2, 2017, https://www.defenseindustrydaily.com/vietnams-russian-restocking-subs-ships-sukhois-and-more-05396/.

B. SUMMARY OF POLITICAL RELATIONS AND STRATEGIC INTERESTS

1. The 1960s through 1980s: The Soviet Lifeline

Vietnam was reliant on Soviet military aid during the Cold War, and by the 1990s most of its inventory originated in the USSR.[251] While Vietnam was not a part of the Warsaw Treaty Organization, the struggle between communist and non-communist factions in a south Asian state straddling an important waterway kept both American and Soviet superpowers interested. According to SIPRI estimates, the Soviet Union provided on average ninety-three percent of annual arms transfers to Vietnam during the span of the Cold War, and at the height of the Vietnam War supplied over U.S. $900 million worth of materiel to North Vietnam and its allies each year.[252] China was also a source of aid to North Vietnam during the 1960s; once reunified, though, Hanoi was embittered by Beijing's refusal to cede control of the southern Paracel Islands, which had been seized by China in 1974.[253] During the 1980s, Soviet arms transfers to aid Vietnam in the Cambodian conflict were achieved by naval blockade-running, and Soviet involvement may have deterred China from annexing the Spratly Islands as it did the Paracel Islands.[254]

Military aid to North Vietnam during the Vietnam War, unsurprisingly, sought to counter American air power in particular. SIPRI estimates that about thirty percent of the total value of its arms receipts between 1965–1974 were air defense systems (predominantly mid-range SA-2 *Guideline* variants); missiles and aircraft comprised another nineteen and eleven percent, respectively.[255] The USSR and China also provided thousands of tanks and armored vehicles, accounting for another nineteen percent (by estimated value) of weapons transfers to the communist state.[256]

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[251] Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 315; SIPRI, "Importer/Exporter TIV Tables."

[252] SIPRI. NOTE: TIVs.

[253] Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 314–15.

[254] Baev and Tønnesson, 315.

[255] SIPRI, "Importer/Exporter TIV Tables."

[256] SIPRI. NOTE: TIVs.

As the 1980s arrived Vietnamese arms receipts became more aircraft-focused; helicopters and planes (mostly MiG-21 and Su-22 fighters) accounted for over half of all weapons imports in 1980–1984.[257] Gorbachev's *perestroika* ended Soviet aid to Vietnam in the latter half of the decade.[258] The equipment being military aid, transfers to Vietnam were often second-hand equipment from the supplier state; what, if any, additional financial or economic compensation Vietnam owed back to its suppliers is uncertain. But by the end of the Cold War, as Vietnam rebranded its economic model under the Doi Moi reforms, the Vietnam People's Army had to maintain a very large inventory of increasingly obsolescent equipment—items that were not only well into their second careers, but that were also not suitable to address the kinds of strategic concerns Vietnam would develop in the new century.

2. Poking the Dragon: Modernization through the 21st Century

Vietnam's story in the post-Cold War era is one of growth and modernization in both the civil and military sectors. In large part due to the successful marketization reforms of the late 1980s, the nation's GDP has grown by approximately five to nine percent annually since the late 1980s.[259] Its purchasing power roughly doubled each decade.[260] With its territory intact and the former southern and northern polities united, Hanoi's strategic goals shifted away from defending the homeland from foreign army incursions, and toward deterring an increasingly expansionist China from chipping away at Vietnamese maritime claims in the adjacent waters of the South China Sea.[261] Hanoi had to modernize its offshore conflict toolbox, despite persistent army "parochialism" and an

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257 SIPRI. NOTE: TIVs.

258 Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 315.

259 "GDP Growth (Annual %) - Vietnam," World Bank, accessed September 15, 2019, https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2018&locations=VN&start=1985&view=chart.

260 "GDP, PPP (Constant 2011 International $) - Vietnam," World Bank, accessed September 15, 2019, https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.KD?end=2018&locations=VN&start=1985&view=chart.

261 Derek Grossman, "Can Vietnam's Military Stand Up to China in the South China Sea?," *Asia Policy* 13 No 1 (January 2018): 114, https://doi.org/10.1353/asp.2018.0010.

institutional structure that hindered development of the VPN and VAD-AF as independent entities.[262]

Thayer ascribes Vietnam's drive toward force modernization to two interrelated factors: the entry into force of UNCLOS III in 1994, with the accompanying legal basis for 200 nautical mile EEZ claims, and "contingencies in the South China Sea."[263] The region's most significant events for Vietnam were the discovery of harvestable oil and gas resources in the South China Sea combined with Beijing's increasingly substantial assertions of Chinese sovereignty within the so-called Nine-Dash Line, which had existed hazily in Beijing's political thought since 1947.[264] China's 1974 seizure of the Paracels and "skirmishes" in the Spratlys a decade later—which Vietnam's anemic navy could not seriously dispute—served as a warning of things to come to leadership in Hanoi.[265] Although traditional armed conflicts over South China Sea claims decreased in the current century, China continues to test foreign claims in the South China Sea by other means, typically asserting their will through "gray zone" measures that do not amount to overt military conflict.[266] These actions have ranged from anchoring a state-affiliated oil drilling platform in the claimed Vietnamese EEZ in 2014, to blocking attempts to resupply Filipino forces stationed at Second Thomas Shoal the same year, to leveraging law enforcement and non-military vessels to ram civilian boats.[267] For Vietnam to successfully repulse foreign claimants to its EEZ, the military would need to adapt its maritime-capable forces to be able to track, surveil and realistically deter interlopers.

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[262] Grossman, 123.

[263] Carlyle A. Thayer, "Force Modernization: Vietnam," *Southeast Asian Affairs* 2018 (2018): 431, https://muse.jhu.edu/article/692103.

[264] Thayer, 431.

[265] Grossman, "Can Vietnam's Military Stand Up to China in the South China Sea?," 116.

[266] Green et al., *Countering Coercion in Maritime Asia*, 21.

[267] Grossman, "Can Vietnam's Military Stand Up to China in the South China Sea?," 116; Green et al., *Countering Coercion in Maritime Asia*, 169–171.

C. ARMS TRADE PATTERNS

Vietnam has emphasized its air, naval and coast guard modernization efforts, reflecting shifts in its strategic interests—from land war in Cambodia to industrializing its economy and defending its interests from perceived Chinese encroachment in the twenty-first century.[268] Sourcing the desired equipment from China was off the table given the strategic situation (somewhat ironically, since China is otherwise Vietnam's most significant trading partner and has become a significant arms exporter for multiple other Asian states).[269] The two nations have not engaged in any notable arms transfers since the 1960s.[270] Instead Russia has played *the* critical role in supplying all branches of the Vietnamese military. As shown in Figure 9, whenever arms transfers to Vietnam spiked after 1992, Russia was the foremost supplier state.

[268] Clark, "Vietnam's Drive to Modernize Militarily," 19–20; Thayer, "Force Modernization," 431–32.

[269] SIPRI, "Importer/Exporter TIV Tables."

[270] SIPRI. NOTE: TIVs.

Figure 9. Russian Arms Exports to Vietnam, SIPRI Trend-Indicator Values (TIV) in Millions USD, 1992–2018[271]

1. Land Forces

The Soviet Union furnished hundreds of tanks and armored personnel carriers to North Vietnam (often along with China) as well as reunified Vietnam (often as a form of aid *against* China).[272] After the end of its land wars in Asia and the collapse of the USSR in the 1990s, Vietnam focused on military acquisitions for the maritime and aerospace domains, and overall demand for transfers of army materiel subsided. In 2017, however, Hanoi and Moscow finalized a transfer of T-90S and main battle tanks and T-90SK (command variant) main battle tanks, sixty-four in total.[273] The T-90 is a significant improvement over the T-55 and T-62 tanks in use elsewhere in the Army, and is expected to replace some of the existing VPA inventory.[274]

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[271] Adapted from SIPRI, "Importer/Exporter TIV Tables." NOTE: All TIV tables use trend-indicator values expressed in constant 1990 U.S. dollars, a unit that is unique to the SIPRI databases, rather than actual financial cost (either real or adjusted for inflation). See Footnote 10.

[272] Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 314–15; SIPRI, "Trade Registers."

[273] Jen Grevatt, "Vietnam Confirms Order of Russian T-90 Tanks," Jane's by IHS Markit, July 26, 2017, https://janes-ihs-com.libproxy.nps.edu/DefenseWeekly/Display/FG_591803-JDW.

[274] Stephen W. Miller, "New T-90s for Vietnam's Army," *Asian Military Review*, August 3, 2017, https://asianmilitaryreview.com/2017/08/new-t-90s-for-vietnams-army/.

2. Maritime Platforms

The six *Kilo* submarines ordered from Russia are the most notable example of Vietnam's expanding naval aspirations. They are the VPN's only full-sized submarines, thus the acquisition marked a major new capability for the Navy.[275] Hanoi placed a U.S. $2.6 billion order with Russia for the six submarines in 2009.[276] Delivery of the first hull took place in 2012, and the final boat was delivered from St. Petersburg in January 2017, generally on time and on budget, after bow-to-stern construction and sea trials in Russia.[277] The "636M" *Kilo* variant purchased from Russia is capable of deploying *Klub* family anti-ship cruise missiles and land attack cruise missiles (or comparably sized systems) as well as torpedoes and mines.[278] Because the exact missile load installed is readily changeable and the onboard missile systems can be upgraded repeatedly, the *Kilo* acquisition will provide Vietnam with an avenue to purchase compatible weapons abroad or to collaborate with foreign research teams (Russian or otherwise) for decades to come.

Vietnam's second most significant naval acquisition is six *Gepard-3.9* guided missile frigates, four of which have been delivered from Russia as of 2018.[279] The class is small and modestly armed for a frigate, but the acquisition marked a major upgrade from the VPN's former largest naval combatants, *Petya*-class corvettes purchased second-hand from the Soviet Union in the 1980s.[280] Hanoi was able to tailor each order to suit the VPN's capability gaps; the first two ships of the class were optimized for anti-surface warfare, carrying eight SS-N-25 *Switchblade* missiles aboard, while the second pair

275 "Vietnam > Navy," Jane's by IHS Markit, October 4, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/FG_2313011-JWNA.

276 Greg Torode, "Vietnam Building Deterrent Against China in Disputed Seas with Submarines," Reuters, September 7, 2014, https://www.reuters.com/article/us-vietnam-submarines-china-insight/vietnam-building-deterrent-against-china-in-disputed-seas-with-submarines-idUSKBN0H20SF20140907. There is some ambiguity over numbers – other news reports place the agreement at about $2 billion.

277 "Vietnam's 6th Russian-Built Submarine to Arrive in January," VnExpress International, November 30, 2016, https://e.vnexpress.net/news/news/vietnam-s-6th-russian-built-submarine-to-arrive-in-january-3506668.html.

278 "Kilo Class (Project 636.1)," Jane's by IHS Markit, June 3, 2019, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/jfs_b357-jfs.

279 SIPRI, "Trade Registers."

280 Defense Industry Daily, "Vietnam's Restocking"; SIPRI, "Trade Registers."

delivered added heavy torpedoes and anti-submarine rocket launchers for a more robust anti-submarine warfare capability.[281] As with the *Kilo*, the frigates' weapons loadout will provide opportunities for continued arms deals with Russia as well as a convenient platform to deploy license-built and possibly indigenously designed armament in the future. With effective operation of *Gepard* frigates and *Kilo* submarines, Vietnam can establish a viable blue water capability in the South China Sea to address what Hanoi sees as provocative Chinese actions within the enclosed sea.

Vietnam ordered numerous FAC and patrol craft for Navy and Coast Guard, demonstrating diversification of suppliers in this field as well. In 2016 Indian firm Larsen and Toubro signed a $100 million deal with Vietnam for delivery of four 35-meter patrol craft for the Vietnamese border guard's use.[282]

3. Air and Air Defense Forces

The Vietnam People's Air Forces are phasing out legacy equipment with a small but capable fighter inventory through direct delivery:

> In January 2009, Rosoboronexport signed approximately $500m worth contract with Vietnam for the delivery of eight Su-30MK2 aircraft to the Vietnam People's Air Force. Vietnam ordered for an additional 20 fighters in July 2010. The first batch of four aircraft was delivered in June 2011. A contract for a further 12 aircraft was signed in August 2013. The last two aircraft were delivered by the first half of 2016.[283]

Like China and India, who historically relied on imported Russian airframes before undertaking (with mixed results) the indigenization of their own aircraft supply lines, Hanoi currently favors outright importation of the new aircraft. Considerations of transportability, delicate avionics suites, and the high physical performance demands associated with many modern aircraft all add complexity to manufacturing and transfer processes. These factors likely incentivize direct delivery of aircraft over nose-to-tail

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[281] Defense Industry Daily, "Vietnam's Restocking."

[282] SIPRI, "Trade Registers."

[283] "Su-30MK2 Multi-Role Fighter Aircraft," Verdict Media Limited, accessed September 15, 2019, https://www.airforce-technology.com/projects/su-30mk2-multi-role-fighter-aircraft/.

production in country, even in nations that are capable of building or assembling some other military systems indigenously.

As of 2017, "Vietnam is buying S-400 *Triumf* air defense systems and MiG-35 multirole combat aircraft, which will replace the Air Force's MiG-21 fighters."[284] However, Russia failed to get its foot in the door vis-à-vis unmanned aircraft. Vietnam's UAV purchases were from Israel and Belarus in 2009–15, which informed an indigenous UAV design fielded the following year.[285]

D. FORMAL AND INFORMAL ARRANGEMENTS

1. Economic/Commercial Accommodations Made by Russia

Hanoi does not publicize most military expenditure specifics, but Russia appears to be continuing some of the old tradition of military aid to Vietnam. A Russian official boasted of the "billion-dollar" relationship between the two nations.[286] Vietnam's 2017 tank acquisition was "reportedly valued at $250 million" and is "partly funded by Russian aid credits."[287]

As seen in Chapters III and IV, refurbishment of second-hand systems can provide a means for nations to acquire major (if often outdated) military systems at a theoretically lower cost and on a shorter procurement timeline than delivery of new equipment. Second-hand equipment is sometimes modified prior to delivery to Vietnam. However, this has only been applicable to non-Russian transfers, (e.g., from Ukraine, Czech Republic, Canada or the United States), as Vietnam has tended to purchase new builds from Russia.[288]

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[284] Grevatt, "Vietnam Confirms Order of Russian T-90 Tanks."

[285] Thayer, "Force Modernization," 435–36.

[286] Prashanth Parameswaran, "Vietnam-Russia Military Ties: Look Beyond the Billion Dollar Boast," *The Diplomat*, 11 September 2018, https://thediplomat.com/2018/09/vietnam-russia-military-ties-look-beyond-the-billion-dollar-boast/.

[287] Miller, "New T-90s for Vietnam's Army."

[288] SIPRI, "Trade Registers."

Russia has provided both maintenance and personnel training contracts to Vietnam, but it is not the only supplier country to do so. Vietnamese submarine crews trained for the *Kilo*-class submarine in St. Petersburg prior to delivery of the VPN's six submarines.[289] India has also undertaken training of Vietnamese submarine crews aboard INS *Satavahana* facilities, the dedicated sub training facility based in Vishakhapatnam, a move characterized in the Indian press as "a major bilateral initiative in the emerging strategic partnership."[290]

2. Technology Accommodations Made by Russia

a. Technology Transfer and Indigenous Production

Vietnam has increased its capacity for indigenous production of military equipment, typically via the intermediate steps of technology transfer or licensed production, although it continues to import its most significant systems from abroad. In 2001, Vietnam assembled a single *Type-1241* patrol craft from a kit shipped in from Russia.[291] By 2016, six of the VPN's eight Russian-designed *Tarantul-5* class guided missile patrol craft were produced in Vietnam.[292] While Russia was Vietnam's most important arms supplier overall, Hanoi also collaborated with secondary partners such as Belarus and Israel for its indigenous unmanned aerial vehicle program; imports from these two nations beginning in 2009, plus technical assistance from Belarus, laid the groundwork for the launch of Vietnam's own surveillance UAV in 2015.[293]

In 2012, Russia and Vietnam announced a joint missile development venture in the vein of India's *BrahMos* project, which Hanoi had expressed interest in purchasing since

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289 Torode, "Vietnam Building Deterrent Against China in Disputed Seas with Submarines."

290 Rajat Pandit, "India Kicks Offs Sub Training for Vietnamese Navy," *Times of India*, November 22, 2013, https://timesofindia.indiatimes.com/india/India-kicks-offs-sub-training-for-Vietnamese-navy/articleshow/26172370.cms; "INS Satavahana," Indian Navy, last modified November 6, 2015, https://www.indiannavy.nic.in/content/ins-satavahana#.

291 SIPRI, "Trade Registers."

292 SIPRI.

293 Thayer, "Force Modernization," 436.

2011.[294] In 2015, Vietnam began production of the KCT-15 anti-ship missile group, air- and surface-launched variants of the SS-N-25 *Switchblade* that were produced under license in Vietnam.[295] The extent of the modifications and Vietnam's exact role in production remains unclear—thus, it also remains unclear whether this is a case of in-country final assembly, full licensed production or if the claim of joint development really has any teeth.[296] With respect to the BrahMos, however, as of 2016 Vietnam was shortlisted as a buyer for the missile by *India* rather than Russia. Russian officials had reportedly greenlit follow-on exports from India during the initial development agreements.[297]

3. Overtly Political/Strategic Accommodations Made by Russia

a. Bilateral Military Cooperation

Present-day Russia enjoys a legacy of popular affection in Vietnam thanks to the extensive military aid the Soviet Union granted in the 1960s and 1970s.[298] Russian ships were a consistent presence at Cam Ranh Bay naval base until the Pacific Fleet's formal withdrawal in the early 2000s.[299] Actual bilateral defense cooperation today is limited but symbolically potent. The bilateral arms trade and technology transfer relationship functions as an important component of the two countries' strategic relationship *per se*; the Russian

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294 "Russia, Vietnam to Start Joint Development of Missile in 2012," Interfax, February 17, 2012, ProQuest; Sanjeev Miglani, "India Plans Expanded Missile Export Drive, with China on Its Mind," Reuters, June 8, 2016, https://www.reuters.com/article/us-india-missiles/india-plans-expanded-missile-export-drive-with-china-on-its-mind-idUSKCN0YU2SQ.

295 Douglas Barrie and Tom Waldwyn, "Vietnam Paddles Its Own Kayak," *Shangri-La Voices* (blog), International Insitute for Strategic Studies, June 5, 2016, https://www.iiss.org/en/shangri-la%20voices/blogsections/2016-588c/vietnam-paddles-its-own-kayak-46c1, paraphrased in Toan Dao, "Vietnam Produces Indigenous Anti-Ship Missiles," VnExpress International, June 13, 2016, https://e.vnexpress.net/news/news/vietnam-produces-indigenous-anti-ship-missiles-3419328.html. The IISS blog entry is no longer available.

296 Dao, "Vietnam Produces Indigenous Anti-Ship Missiles."

297 Miglani, "India Plans Expanded Missile Export Drive, with China on Its Mind."

298 "Russia's Friendship Order Bestowed upon Vietnam's Deputy Minister," Vietnam News Agency, September 23, 2019, https://en.vietnamplus.vn/russias-friendship-order-bestowed-upon-vietnams-deputy-minister/160938.vnp.

299 Anton Tsvetov, "Russia's Tactics and Strategy in the South China Sea," Center for Strategic and International Studies, November 1, 2016, https://amti.csis.org/russias-tactics-strategy-south-china-sea/.

ambassador to Vietnam highlighted "cooperation in…military science-technique" when presenting Vietnam's deputy defense minister with the Order of Friendship of Russia.[300] Vladivostok hosted a group of Vietnamese warships in a recent fleet review, marking an unusual out-of-area deployment for the VPN; additionally, Hanoi and Moscow have announced plans for "joint rescue drills" late in 2019.[301]

b. Energy Security

Russo-Vietnamese energy cooperation shares several parallels to defense cooperation – both fields are critical to national security, tend to have a technical character, and ride on a legacy of Soviet benevolence. Although not directly related to arms transfers, energy security for Vietnam is intertwined with the maritime boundaries disputes that have also shaped Hanoi's current strategic interests. The 2014 standoff over a Chinese oil rig positioned in disputed waters of the South China Sea touched off an "increasingly antagonistic" relationship between Vietnam and China.[302]

Hanoi still looks to Moscow as a senior partner in the energy cooperation field even as it diversifies its foreign arms suppliers. Baev and Tønnesson imply that the bilateral energy collaboration is almost entirely politically motivated on Moscow's part, as the partnership is not fiscally profitable for the Russian state and does not significantly enhance that sector of the Russian economy.[303] This leaves political payoff as the main goal of Russo-Vietnamese collaboration in this sector: another venue for Moscow to signal good intentions to Hanoi despite increasing commitment to Beijing.

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[300] Vietnam News Agency, "Russia's Friendship Order Bestowed upon Vietnam's Deputy Minister."

[301] Anh Vu, "Russia, Vietnam to Hold Joint Rescue Drills in South China Sea," VnExpress International, November 21, 2019, https://e.vnexpress.net/news/news/russia-vietnam-to-hold-joint-rescue-drills-in-south-china-sea-4015209.html.

[302] Grossman, "Can Vietnam's Military Stand Up to China in the South China Sea?" 116–17.

[303] Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 320.

E. VOLUME AND TRENDS

Vietnam does not seek to establish full lines of indigenous production in the near to mid-term. Economic growth has enabled increased defense spending, of which arms imports form a critical component. However, the country lacks robust defense R&D and manufacturing sectors. Currently, indigenous production is limited to combat and transport vehicles, small arms, unmanned systems and fairly constrained licensed production and shipbuilding efforts for major military systems (e.g., missiles, ships). For Hanoi, it is more effective and timely to import the systems it desires than to establish the infrastructure required to build a comparable capability in country. Vietnam has, however, sought to diversify its dependence on Russia during equipment life cycles, particularly by building its relationship with India, as demonstrated by recent discussions of missile sales and the bilateral submarine crew training program.[304]

F. OUTLOOK

In the immediate context, arms transfers from Russia strengthen political ties, although perhaps weapons play second string to energy collaboration, which Baev and Tønnesson interpret as crucial to maintenance of Moscow's relationship with Hanoi.[305] Economically, arms deals are significant but not an overwhelming influence. Vietnam's GDP has doubled since 2006 (U.S. $91 billion to U.S. $187 billion in 2018, both constant 2010 prices).[306] SIPRI estimates Vietnamese military expenditures were 1.8–2.4% of GDP

304 Sanjeev Miglani, "India Says in Talks with Vietnam for First Missile Sale," Reuters, February 15, 2017, https://www.reuters.com/article/us-airshow-india-vietnam/india-says-in-talks-with-vietnam-for-first-missile-sale-idUSKBN15U0YB; Pandit, "India Kicks Offs Sub Training for Vietnamese Navy."

305 Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 320.

306 "GDP (Constant 2010 US$) - Vietnam," World Bank, accessed September 15, 2019, https://data.worldbank.org/indicator/NY.GDP.MKTP.KD?end=2018&locations=VN&start=1985&view=chart.

since 2003 and 7.2–8.2% of government expenditures overall.[307] Defense spending is on pace with GDP growth.[308]

Russia has been crucial in helping Vietnam avoid destabilization from the rise of China. Shang-Su Wu argues that "in contrast to military modernisation, military obsolescence has equal, if not greater, potential to destabilise the regional situation."[309] Obsolescence has two main causes: it can be brought about by an outside party's modernization, as well as by degradation of existing materiel.[310] Since wear and tear or simple aging of military equipment is inevitable, a country that is treading water maintaining its current force level, while a nearby nation (with perceived aggressive intentions) is also improving its own military through modernization, is doubly threatened.

Vietnam is unique in its region, as its booming economy has allowed vast increases in defense spending over the past decade. However, its legacy inventory of Soviet military equipment is growing more costly to maintain, and Hanoi still has limited funds and human capital to invest in modernization, especially compared to a billion-person manufacturing and scientific powerhouse like China or India. Wu sees Hanoi as "[facing] a strategic dilemma in military acquisition: either to spare certain resources to modernise the VPA and other neglected capabilities, or to continue its concentration of investment on maritime and aerial capability to cater to…territorial disputes."[311]

Under Walt's framework of alliance formation, a threat situation provides a strong impetus to align with other, less threatening states to balance the threat.[312] The "balancing" species of alliance formation tends to be preferred by states unless they are "especially

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[307] SIPRI, "SIPRI Military Expenditure Database." SIPRI applies the following important caveat: "The defense budget of Viet Nam has been declared to be a state secret according to media sources. The figures for Viet Nam for 2012–2017 are also from media sources, whose reliability cannot be easily assessed and thus marked as uncertain."

[308] SIPRI. Same caveat applies.

[309] Shang-su Wu, "Vietnam: A Case of Military Obsolescence in Developing Countries," *The Pacific Review* 32, no. 1 (February 2018): 2, https://doi.org/10.1080/09512748.2018.1428676.

[310] Wu, 3.

[311] Wu, 15.

[312] Walt, *Origins of Alliances,* 5, 21–22.

weak and isolated."[313] Vietnam is attempting to stabilize its own destabilizing situation driven by Chinese modernization, by focusing its budget on modernizing critical capabilities, leaving its land forces in a state of increasing obsolescence.[314] Historically in Vietnam's case, that less threatening state was the Soviet Union, and its main successor state Russia has ridden the resulting legacy of popular goodwill and institutional ties in both countries.[315] But Moscow's post-Cold War ties to Beijing in the energy and defense sectors—and the Russian economic dependence on Chinese money, especially after the 2014 Crimean annexation—makes Russia an increasingly unreliable partner.[316] This may contribute toward Vietnam's overtures to India, the United States, Japan, and its fellow ASEAN members.

Hanoi can continue to leverage Moscow's investment in maintaining good relations to outsized Vietnamese benefit. Russia has additional incentive to offer Vietnam arms deals that are too sweet to refuse, as one element of a virtuous cycle of alliance formation.[317] From the Kremlin's perspective, Vietnam provides Russia an independent ally in southeast Asia outside the strongest portion of the Chinese sphere of influence, since Vietnam and China's territorial disputes in the South China Sea put the two countries at odds. (Despite their disagreements, Vietnam and China maintain normal diplomatic relations and China is Vietnam's largest trade partner.[318])

Russian arms transfers give Vietnam an affordable means of accomplishing its strategic goals of force modernization and Chinese deterrence, although other suppliers could also provide this capability, albeit with less favorable financial terms – and are likely to do so in the future. However, arms transfers and energy cooperation already approach

313 Walt, 263.

314 Wu, "Vietnam: A Case of Military Obsolescence in Developing Countries," 15.

315 Baev and Tønnesson, Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?," 315–16.

316 Baev and Tønnesson, 317.

317 Walt, *The Origins of Alliances*, 42–45.

318 Baev and Tønnesson, 316.

the limits of what Russia can offer Vietnam.[319] Outside of these fields, Russia is not a vital trade partner for Vietnam, although the two states are aiming to "triple trade by 2020" from its 2017 value of approximately U.S. $3.55 billion.[320] If the Russo-Vietnamese relationship stagnates, other countries will likely step in.

[319] Baev and Tønnesson, 313, 321.

[320] Khanh Vu and Polina Devitt, ed. Shri Navaratnam, "Vietnam, Russia Aim to Nearly Triple Trade to $10 Billion by 2020," Reuters, November 18, 2018, https://www.reuters.com/article/us-vietnam-russia-idUSKCN1NO0HO.

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VI. PATTERNS AND IMPLICATIONS

This chapter will discuss the motivations of customer states in procuring weapons from Russian suppliers. For each of the case studies presented in Chapters III–V, I will ask if Russia in its capacity as an arms supplier can be categorized as:

1. The most affordable option from a financial/fiscal standpoint
2. The best-tailored option from a technological standpoint
3. A neutral or counterbalancing option from a political standpoint

These factors are interrelated, since national defense involves all three categories. The discussions of the previous three chapters indicate that all of them are applicable to some extent in any arms transfer agreement.

The chapter will finish with a brief discussion of the implications of the case studies, oriented toward profiling future customer states and predicting whether continued arms transfers from Russia will be more likely to stabilize or destabilize regional dynamics.

A. CHINA

In the case of China, Russia is best interpreted as the arms supplier that was best technologically suited to the needs of its customer. While affordability and international optics were important concerns, China most importantly took advantage of the Russian willingness to part with large amounts of second-hand Soviet equipment, as well as deliver new-built platforms, to form the baseline for its own military modernization, expansion, and drive toward defense self-sufficiency.

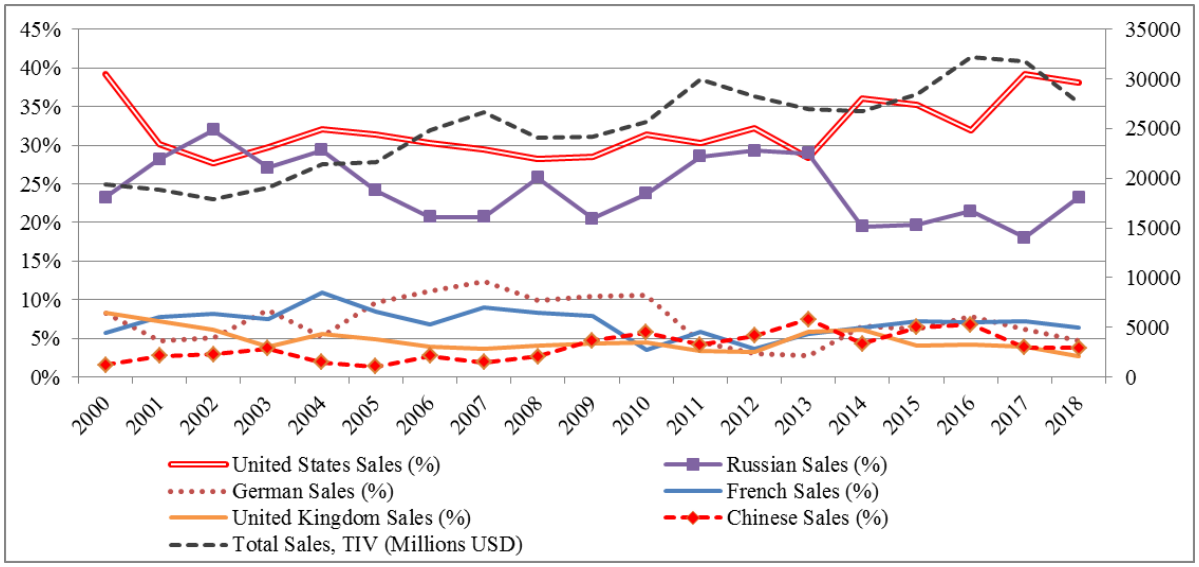
China is now a major weapons exporting country, as Figure 10 shows. According to SIPRI data, Chinese arms exports have now approached 1980s levels, when the main recipients of Chinese weapons were Iran, Iraq and Egypt.[321] Today the Chinese arms export market is focused in southern Asia—Pakistan, Bangladesh and Myanmar.[322]

[321] SIPRI, "Importer/Exporter TIV Tables."

[322] SIPRI. NOTE: TIVs.

Additionally, the most significant expansion in exports from China pertained to air defense systems and ships, two fields in which Russia also specializes.[323] This will be detrimental for the Russian arms export industry in the long run—if not in absolute numbers (although these have declined slightly since 2014), then in share of the market. Now that China is once again increasing its arms sales to third parties, Beijing and Moscow may find themselves competing for the same contracts.

Figure 10. Major World Arms Exporters, SIPRI Trend-Indicator Values (TIV), 2000–2018[324]



China has become independent in many stages of arms procurement, from design to manufacture to disposition. Since China has not always enjoyed its current levels of self-sufficiency in the defense manufacturing sector, Russia provided a convenient source to fill gapped capabilities at acceptable financial costs and timelines, especially as Moscow

[323] SIPRI. NOTE: TIVs. Specifically, Chinese AD exports increased in value assessed by SIPRI from U.S. $90 million in 2000–2009 to U.S. $922 million in 2010–2017, representing about a tenfold expansion; ship exports increased from U.S. $883 million to U.S. $2.85 billion over the same periods, representing slightly more than a threefold increase (and the decade isn't over yet). Aircraft and armored vehicles are still the most important arms export types from China, but grew less markedly during this period.

[324] Adapted from SIPRI, "Importer/Exporter TIV Tables." NOTE: All TIV tables use trend-indicator values expressed in constant 1990 U.S. dollars, a unit that is unique to the SIPRI databases, rather than actual financial cost (either real or adjusted for inflation). See Footnote 10.

sought to sell off Soviet equipment and stave off financial crises in its defense-industrial sector. Thus, Russia was once the fiscally "affordable option" for arms transfers. This remains true today but in more limited circumstances. Today Beijing prioritizes indigenous manufacturing, as observed in the rapid expansion of the PLAN and PLAAF. There is still a demand in the PLA for specific Russian-manufactured systems: for example aircraft engines—due to problems with indigenous steel quality—or cutting-edge systems such as the long range SA-21 air defense system, which provides a capability China may want to emulate domestically.[325] However, widespread acquisition of entire platforms is likely to remain a phenomenon of previous decades.

China seeks to establish indigenous capability through the full spectrum of defense activities. For a state in this position, being able to plow additional R&D or infrastructure costs back into local economies, rather than paying a smaller amount to a supplier state for a comparable platform, may be another techno-commercial incentive against buying abroad. While I have generally not been able to determine monetary costs of Chinese weapons manufacturing, the competitiveness of its exports abroad indicates that development and manufacturing costs are comparable to or lower than those of other potential supplier states. (Alternately, Beijing has decided gaining a foothold in the international arms market justifies selling equipment at a financial loss – in which case there are other forms of capital at stake.) According to SIPRI data, China exported more than twice the value of military equipment during 2010–2017 than the entire previous decade.[326] When NATO member Turkey sought a contractor for establishment of its $3.4 billion long-range air defense system in 2013, the Chinese bid was selected over offers from three other competitors, including the United States and Russia, on account of "lower price, favorable technology transfer conditions, and early delivery" of certain components.[327] After significant NATO backlash, the deal was cancelled two years later;

[325] SIPRI, "Trade Registers."

[326] SIPRI, "Importer/Exporter TIV Tables." SIPRI valued 2010–2017 transfers at U.S. $12.5 billion; 2000–2009, U.S. $5.7 billion.

[327] Mustafa Kibaroglu and Selim C. Sazak, "Why Turkey Chose, and Then Rejected, a Chinese Air-Defense Missile," Atlantic Media Defense One, February 3, 2016, https://www.defenseone.com/ideas/2016/02/turkey-china-air-defense-missile/125648/.

Russia eventually stepped in, offering favorable lira-ruble exchange terms and no co-production for transfer of the S-400 (NATO reporting name SA-21 *Growler*), a system that both China and India have also sought to procure.[328]

Today, Russia is China's preferred supplier for foreign arms acquisitions that are tailored to address specific technology gaps in the military branches. Such sales can provide technological templates for future adaptation and domestic production. This is probably the ultimate goal of current acquisitions like the SA-21, given the outcome of previous decades' arms transfers and Beijing's tendency to reverse engineer transferred equipment or conduct industrial espionage. In the 1990s and 2000s, it was second-hand *Soviet* technology that provided the foreign baseline for expansion and modernization of the Chinese military. The dissolution of the USSR provided China a unique target of opportunity for massive arms acquisitions and thus technology transfer. China was a practical customer, and while post-Soviet Russia (unsurprisingly) furnished most of the equipment transferred during this period, Beijing was also willing to purchase from other former Soviet states if they provided a desired capability, such as the acquisition of its *Kuznetsov*-class aircraft carrier from Ukraine.

Outside of the defense sector, Russia is increasingly dependent on China.[329] The relationship is asymmetrical, with China the more influential player. This gives Beijing the political leverage. Russia is a political and economic pariah in the West due to the 2014 annexation of Crimea, so Asia is the crucial market for Russian energy exports. The Chinese economy seriously outweighs that of Russia. Russian efforts to revitalize its Far East, whose ports might compete commercially with Chinese coastal cities, have mostly failed.[330] From a threat standpoint, Russian president Putin is oriented primarily against NATO, but increasingly seeks a means to balance China's influence in the Pacific. President Xi, however, is most interested in asserting Chinese sovereignty within the first

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[328] Burak Ege Bekdil, "Turkey Makes Deal to Buy Russian-Made S-400 Air Defense System," Sightline Media Group Defense News, December 29, 2017, https://www.defensenews.com/land/2017/12/29/turkey-russia-reportedly-sign-loan-deal-for-s-400-air-defense-system/.

[329] Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 312–13.

[330] Baev and Tønnesson, 316.

island chain and Indo-Pacific, which brings it into conflict with nations that have overtly expressed friendship with Russia, e.g., India and Vietnam.

From Beijing's perspective, the collapse of the USSR provided a fortuitous opportunity to revitalize the People's Liberation Army and paramilitary organizations, while leaping forward technologically vis-à-vis its own DIS production capabilities. The Chinese buildup has had a ripple effect throughout Asia, prompting additional military expansions that both China and Russia will try to exploit in the decades to come.

B. INDIA

Russia is best analyzed as a technologically ideal partner for India throughout the last several decades of the two countries' relations. It must be added, however, that Rosoboronexport was often a more cost-effective source of weapons than the Indian defense-industrial sector, given the frequent schedule delays and cost overruns of multiple high-profile indigenous military projects. At various points since India's independence, including in the present day, Moscow has also functioned as a valuable political ally, even if the relationship rarely goes beyond the security and energy fields.

Through sales, technology transfer agreements and joint development projects, Russia has greatly accelerated India's military modernization. Although India has a number of arms deals in place with Western suppliers, Russia continues to provide critical brainpower and arms manufacturing capacity, despite less than smooth sailing in many of New Delhi's procurement dealings with Rosoboronexport. By undertaking joint ventures like the *BrahMos*, India has also set itself up for a certain level of path dependency in the decades to come. Russia has also provided India with a number of technological templates, e.g., lease of the *Akula* nuclear-powered attack submarine and sale of *Vikramaditya* aircraft carrier, that incentivize compatibility with Russian equipment. Unlike China, however, India has not become a major exporter of weapons—SIPRI values Indian arms exports since 2010 at about U.S. $200 million in total.[331] The eventual sale of the *BrahMos* will add significantly to New Delhi's weapons export revenue, but Indian sales to third parties

[331] SIPRI, "Importer/Exporter TIV Tables."

was blessed by Russia from the beginning. Moscow does not fear that India will soon eat into its market share.

In the political arena, aligning with Russia counterbalances the threat of Pakistan, India's greatest strategic concern. In the longer term, the relationship may help balance the Chinese threat as well. India is reacting to Chinese military buildup and growing power projection capability—exemplified by Beijing's continuous deployment of naval assets to the Indian Ocean and Chinese aid in developing Gwadar and Djibouti as part of the one belt, one road concept—by seeking less threatening nations to ally. This has resulted in increased military cooperation with minor states in South Asia. Military-technical cooperation and the strategic partnership with Russia is another major way to signal such an alignment, although as discussed in Chapter IV, New Delhi is carefully signaling its neutrality in other geopolitical environments by maintaining cordial relations with the United States and other Western powers as well.

India's ability to procure military equipment from abroad was severely curtailed in the 1990s, and Russia proved a financially accommodating supplier. The Yeltsin administration continued to work with India through the financial crisis and recovery of the 1990s, and ruble-rupee financed deals, bypassing the U.S. dollar, still occur. Significant industrial offsets were built into many transfer agreements. Indigenous production in India remains behind-schedule and over-budget, and it continues to be cheaper to procure some major systems abroad than to "make in India," as evidenced by the cost differential between India's foreign-built and domestically built *Talwar*-class destroyers, as well as multiple delays and expense overruns associated with the *Kalvari*-class (*Scorpène*) submarines currently under licensed construction in Mumbai.[332] With Russian procurements in particular, though, delays in delivery, cost overruns and maintenance problems make the fiscal situation less than ideal, and have cost India millions.

[332] Pubby, "India Clears Way for $2.2-Billion Frigates Deal with Russia;" Rahul Bedi, "India Approves Additional Payment for Delayed Scorpene Programme," Jane's by IHS Markit, March 11, 2010, https://janes-ihs-com.libproxy.nps.edu/Janes/Display/jdw42508-jdw-2010.

C. VIETNAM

As for Vietnam, arms transfers from Russia represent the most economically feasible pathway to achieving its own military capability goals, since Vietnam's own defense budget is a good deal more constrained than either of the other two case study countries. However, Hanoi's military goals are responsive to the growth of China, and the Russo-Vietnamese relationship must be seen through the lens of both states' mutual political dependency.[333]

Russia reaped the monetary benefits of Soviet-Vietnamese military cooperation in the 1990s and 2000s. Vietnam accepted substantial Soviet military aid during the Cold War, in pursuit of strategic/political goals and without much financial cost to Vietnam. But Vietnam's mostly Soviet inventory at the end of the Cold War resulted in both technological and financial path dependency, as follow-on Russian systems tended to be more compatible with legacy Soviet equipment than deliveries from other suppliers countries would be. Vietnam has a much smaller potential for economies of scale in indigenous weapons production than a larger, wealthier nation like India or China. This limits the feasibility of a hypothetical 'make in Vietnam' effort (although such efforts have occurred, e.*g.*, indigenization of patrol ship production), as there is only so much room in the defense budget for R&D and indigenous procurement, and a smaller pool of domestic brainpower to draw on. Under these circumstances, arms transfers from foreign suppliers are crucial to military modernization.

The Soviet Union was Vietnam's primary technology supplier during the Cold War by dint of the scale of its military aid. After the collapse, Russia remained the preferred partner by virtue of path dependency and institutional habits. However, today Hanoi is realizing that non-Russian entities may provide more pleasingly packaged capabilities at a competitive cost, and may also be willing to provide a level of technology transfer comparable to that provided by Russia. Thus, Vietnam will continue to diversify its arms supplier portfolio.

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[333] Baev and Tonnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 313.

Hanoi prizes friendship with Moscow as a means of countering China, both historically and in the present day. This reading fits into Stephen Walt's theory of alliance formation, when two weaker states align to balance a stronger threat state and stabilize a regional power imbalance.[334] Moscow is also extremely interested in maintaining a strong relationship with Vietnam, as its investment in the Vietnamese energy sector suggests. However, the increasing Russian economic and political dependence on China works to undermine the notion of Russia as a trusted political partner.[335] For the administrations in both Hanoi and New Delhi, Moscow is re-orienting toward Beijing whether it wants to or not. Vietnamese (and Indian) leadership will likely draw closer to Chinese rivals in the region—the United States, Japan—as a reflexive response to this shifting geopolitical environment.[336]

D. IMPLICATIONS

1. Future Russian Arms Transfers

What might a prospective Russian arms customer look like? The interaction between purchaser state motivations to import Russian-made defense systems and Russian motivations to export them indicates that there is a wide range of potential purchasing countries. Nevertheless, two country profiles seem most likely:

1. The customer is either a developing state—not a wealthy one—seeking to add or enhance a basic to mid-level capability at comparatively low cost;

2. Or the customer is a developed state that is not aligned with the U.S. or NATO and seeks to add specific advanced capabilities to its repertoire.

The obvious exception among the NATO countries is Turkey, whose relationship with the remainder of NATO has become increasingly strained while drawing closer to Russia under the Erdogan administration. In addition to delivery of the SA-21 *Growler* air defense

334 Walt, *Origins of Alliances*, 17–19.

335 Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 313.

336 Baev and Tønnesson, 313.

system, which commenced in 2019, Ankara has also expressed interest in acquiring fifth-generation Su-57 *Felon* and Su-35 *Flanker-E* jet fighters from Moscow following the withdrawal of the American offer to supply the F-35 *Lightning II* to Turkey.[337] The retraction of the offer was reportedly directly tied to the SA-21 deal.[338] It may also be related to disapproval from the United States over Turkey's hostility toward its Kurdish minority and general misalignment over the Syrian conflict, both of which add pressure to the NATO ties.

Given the geopolitics of the Indo-Pacific region, potential buyer states could also be characterized as:

3. Countries with unfriendly neighbors that are modernizing their military forces (especially with the assistance of states oriented against Russia), and thus increasing in threat.

There are unlikely to be any true successors to China and India, at least not in Asia. Those two nations will continue to skirmish over influence in the Indo-Pacific, and right now China has the upper hand. But there is a high potential for more Vietnams, as the growth of both of the Asian giants continue to worry their smaller neighbors. An expanding economy is also probably an important precondition, as mere maintenance of existing military equipment could easily consume the defense budget of an economically stagnant state.[339]

In southeastern Asia, where most states fit the first customer profile above, Indonesia and Malaysia have begun modernizing their militaries relying on both Russian and (to a lesser extent) Indian equipment as a response to China, in the pattern of Vietnam.[340] In southern Asia, Pakistan, Myanmar and Bangladesh have all become significant customer states for Russian arms vendors; in Pakistan’s case primarily to

337 Tom Balmforth, “Russia, Turkey Discuss Supply of Russian Warplanes: RIA,” Reuters, August 28, 2019, https://www.reuters.com/article/us-russia-turkey/russia-turkey-discuss-supply-of-russian-warplanes-ria-idUSKCN1VI0T7.

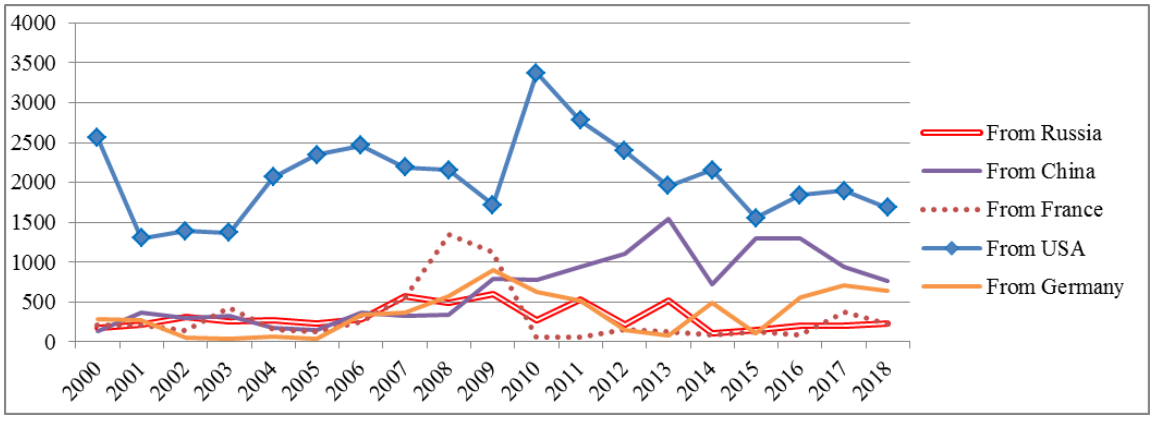
338 Balmforth.

339 Unless a state increases the defense budget relative to overall government revenue.

340 SIPRI, “Importer/Exporter TIV Tables.”

counter India, itself a response to Chinese expansion. Yet arms exports from Chinese manufacturers to many nations in the Asia-Pacific are growing rapidly. Figure 11 illustrates the trend. If we disregard transactions with India and Vietnam, we see that in the last decade the volume of *Chinese* arms exports to maritime Asia have edged out the Russian competition (although Russia remains the dominant arms supplier for the central Asian states) and are approaching volumes similar to U.S. exports in the region, which have also declined concurrent to the upswing in Chinese exports.[341] If the Philippines' defense relationship with the United States deteriorates, Manila could turn to Russia for future arms acquisitions as well.

Figure 11. Arms Exports to Maritime Asian States (Excluding China, India and Vietnam) from Selected Suppliers, SIPRI Trend-Indicator Values (TIV) in Millions USD, 2000–2018[342]



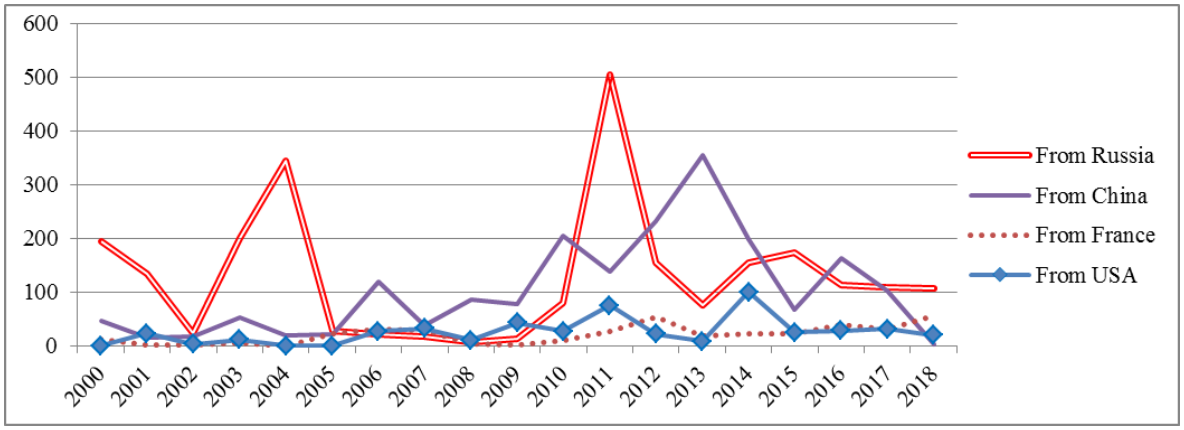
Russia is a major arms supplier for most of the Mediterranean African states. The Kremlin's involvement outside of its traditional Asian and northern African markets, however, is less secure and could be overtaken by fresh competition. Figure 12 shows that China is already a strong competitor for sub-Saharan Africa, a region that was long ignored

341 SIPRI. NOTE: TIVs.

342 Adapted from SIPRI, "Importer/Exporter TIV Tables." NOTE: All TIV tables use trend-indicator values expressed in constant 1990 U.S. dollars, a unit that is unique to the SIPRI databases, rather than actual financial cost (either real or adjusted for inflation). See Footnote 10.

by Western defense manufacturers and represents the world's least saturated arms market. Most of the states in this region would also fit into the first customer profile listed above. Euro-American defense firms will compete with Rosoboronexport in wealthier Western markets, including those of South America, although Russia consummated a significant transfer deal with Venezuela in 2014 and will continue to seek export opportunities in Latin America.

Figure 12. Arms Exports to Sub-Saharan African States from Selected Suppliers, SIPRI Trend-Indicator Values (TIV) in Millions USD, 2000–2018[343]



Another avenue that Russia might continue to explore is joint development ventures with junior partners – a la the *BrahMos*, FGFA and MTA aircraft projects with India, AS-18 modifications with China, or the KCT-15 missile with Vietnam. Such projects theoretically demand less labor and time from Russian personnel, are scalable to match the user state's indigenous production goals, have soft power payoffs, and do not necessarily need to be destined for use in the Russian military. Russia is a long-established supplier state, while the Chinese defense industry is still building its reputation as a reliable business partner.[344] The Kremlin might still enjoy an advantage pursuing this type of arms deal,

[343] Adapted from SIPRI, "Importer/Exporter TIV Tables." NOTE: All TIV tables use trend-indicator values expressed in constant 1990 U.S. dollars, a unit that is unique to the SIPRI databases, rather than actual financial cost (either real or adjusted for inflation). See Footnote 10.

[344] Boutin, "Arms and Autonomy," 221.

even in regions where Chinese-made weapons exports have generally overtaken those of Russia.

2. Outlook/Significance

In the twenty-eight years since the end of the Cold War, the international community has undergone significant structural, technological and social changes. The transition from a bipolar power structure to a multipolar one has not been marked by devastating great-power wars but by unease, uncertainty and varying levels of unwillingness to revise existing international norms. The development of the microcircuit, personal computer, worldwide web, and wireless connectivity have revolutionized communications across the planet; but in addition to opening up a new global commons, they have created a new potential avenue for future conflicts, made data protection infinitely more complex, and implanted new nodes of vulnerability within critical infrastructure. Technological proliferation has improved the lives of billions and enriched economies across the world, but has narrowed the access gap to advanced technology between large and small powers, including non-state actors. Ideology no longer neatly divides the world into spheres of influence separated by buffer zones. The massive wars of the twentieth century, with their massive human costs, are in the past, replaced by asymmetric and hybrid warfare. Moreover, there is a strong political will to avoid repeating wars of such enormous magnitude.

Military systems manufactured today can rarely ignore these new realities. They must be increasingly sophisticated, precise, affordable and competitive due to the expanding range of both suppliers and buyers.[345] Furthermore, as weapons and sensors advance, it becomes increasingly difficult to defend against them in such a way as to also not harm the simultaneous use of friendly gear—for example, generating an electro-magnetic pulse or broadband jamming signal to deploy against adversary electronics would likely also interfere with friendly electronics. This increases the research and development costs of new systems, whether offensive or defensive, as they must try to anticipate as many

[345] Mussington, *Understanding Contemporary International Arms Transfers*, 4.

future vulnerabilities as possible. It may also incentivize the retention of older, more survivable backup systems, which can add to the operating costs of military equipment and personnel.

Countries react strongly to others' military modernization (or to the corollary, their own military obsolescence) if they perceive an increasing threat. Therefore, arms exports can be potentially destabilizing or stabilizing, depending on the customer state. As Wu highlights, a nation that modernizes or expands its military (by any means) might cause a ripple effect as neighboring states find their own militaries becoming outdated, and either boost domestic defense production or look abroad to rapidly modernize their own militaries.[346] In the case studies discussed earlier, this can be seen with Vietnam's reaction to the Chinese military growth of the 1990s, as well as India's response to Pakistani arms acquisitions at various points throughout their shared history.[347] Such second-order reactions could result in follow-on opportunities for an arms supplier if the supplier is able to arrange arms transfer agreements with reacting states. Could this suggest that a prospective arms exporter might have profit-based incentive to encourage arms transfers in regions where supplier niches are not filled, regardless of whether the competition is stabilizing or destabilizing?

Russia, which sees itself as a "maverick" on the world stage, is willing to play both sides, as seen with its ongoing arms transfer relationships with all three case study countries.[348] It is unclear if this is a calculated strategic move on the Kremlin's part or merely a matter of structural necessity. As discussed in Chapter II of this thesis, the Russian defense industrial sector depends on a strong international export market, as domestic military demand is finite and most of the constituent companies do not have significant lines of effort outside the DIS.[349] (The same can be said of the Russian energy industries.)

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[346] Wu, "Vietnam: A Case of Military Obsolescence in Developing Countries," 1–2.

[347] For first example, see Thayer, "Force Modernization," 431; for second example, see Jane's by IHS Markit, "India to Buy Russian T-90S MBTs."

[348] Baev and Tønnesson, "Can Russia Keep its Special Ties with Vietnam while Moving Closer and Closer to China?" 317.

[349] SIPRI, "SIPRI Arms Industry Database."

Although Russia, particularly desperate for cash flow in the Yeltsin era, played a key role in jumpstarting China's military expansion, it has also facilitated the balancing expansions that followed in other Asian nations. China's search for regional hegemony has been the principal destabilizer since 1991, but both India's and Vietnam's recent arms acquisitions have made the Indo-Pacific region more stable by challenging the Chinese rise to some extent.

Russia will remain a major player on the world arms transfer market, and has contributed to the creation of additional potentially significant suppliers. From an American perspective, Russia has been willing to export weapons to countries that United States policymakers find objectionable (e.g., Venezuela, Turkey), which could lead to destabilization or an effect contrary to U.S. national interests. Yet Russian arms transfers have also enabled recipient countries to stand up to strategic adversaries of the United States. Russian-made arms will continue to play a significant role in the global arena for decades to come. It behooves American policymakers and military personnel to understand what factors might continue to attract customer states toward a deal with Rosoboronexport.

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